

Biological Assessment

Florida Department of Transportation, District 3

in cooperation with

Department of the Air Force, Eglin Air Force Base

Financial Project No. 411102-1

ETDM No. 8167

FWS No. 2009-F-0086

SR 123 from SR 85S to SR 85N

Eglin Air Force Base, Okaloosa County, Florida

The proposed project involves widening SR 123 from north of SR 85S to SR 85N from a two-lane rural undivided roadway to a four-lane divided facility. A grade-separated interchange at the intersection of SR 85N and SR 123 is also included. The total project length is approximately five miles.

May 2011

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List of Acronyms, Abbreviations, and Initialisms

AASHTO	American Association of State Highway and Transportation Officials
AFB	Air Force Base
al.	alii (others, used as <i>et. al.</i> , for <i>and others</i>)
BA	Biological Assessment
BGEPA	Bald Eagle and Golden Eagle Protection Act
BMP	Best Management Practices
CFA	Core Foraging Area
DEMO	District Environmental Management Office
DoD	U.S. Department of Defense
ESA	Endangered Species Act
FAC	Florida Administrative Code
FONPA	Finding of No Practical Alternative
FONSI	Finding of No Significant Impact
ERP	Environmental Resource Permit
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FDOT3	Florida Department of Transportation, District 3
FE	Federally Endangered
FHWA	Federal Highway Administration
FIHS	Florida Intrastate Highway System
FL	Functional Loss
FLUCCS	Florida Land Use Cover Classification System
FNAI	Florida Natural Area Inventory
FR	<i>Federal Register</i>
FS	Florida Statute
FT	Federally Threatened
FWC	Florida Fish and Wildlife Conservation Commission
GIS	Geographic Information System
INRMP	Integrated Natural Resource Management Plan
LOS	Level of Service
mi	Mile
mph	Mile per Hour
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resource Conservation Service
NWFWMD	Northwest Florida Water Management District
PD&E	Project Development and Environment
RCW	Red-cockaded Woodpecker
RFG	Relative Functional Gain
ROW	Right-of-Way
SE	State Endangered
SIS	Strategic Intermodal System
spp.	Species
SR	State Road
SSC	Species of Special Concern
ST	State Threatened
TESS	Threatened and Endangered Species System
US	United States
UMAM	Uniform Mitigation Assessment Method
USACE	U.S. Army Corps of Engineering

List of Acronyms, Abbreviations, and Initialisms (*continued*)

USAF	U.S. Air Force
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VPS	Northwest Florida Regional Airport
WHR	Wildlife and Habitat Report

Preface

This Biological Assessment has been prepared pursuant to Section 7 of the Endangered Species Act to evaluate potential impacts to the Okaloosa Darter for the action of widening State Road (SR)123 through Eglin Air Force Base in Okaloosa County, Florida. The proposed action has been updated to evaluate a bridge span structure to replace an existing culvert on an un-named tributary to Turkey Creek. Use of a bridge span is preferred by the U.S. Fish and Wildlife Service, and by Eglin Air Force Base as a Cooperating Agency.

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Biological Assessment to Determine Potential Impacts to Federally-Listed Endangered Species Resulting from the Widening of SR 123, Okaloosa County, Eglin Air Force Base, Florida

1.0 INTRODUCTION

The purpose of this Biological Assessment is to review the proposed project, Widening of SR 123, in sufficient detail to determine to what extent the proposed action may affect any of the threatened, endangered, proposed, or sensitive species listed below. This Biological Assessment is prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act (16 U.S.C. 1536(c)), and follows the standards established in Federal Highway Administration (FHWA) guidance.

The species considered in this document are:

Threatened, Endangered, Proposed Threatened or Proposed Endangered Species¹

- Gulf Sturgeon (*Acipenser oxyrinchus desotoi*) [Threatened]
- Okaloosa Darter (*Etheostoma okaloosae*) [Threatened]
- Eastern Indigo Snake (*Drymarchon couperi*) [Threatened]
- Reticulated Flatwoods Salamander (*Ambystoma bishopi*) [Endangered]
- Red-Cockaded Woodpecker (*Picoides borealis*) [Endangered]
- Wood Stork (*Mycteria americana*) [Endangered].

Candidate Species, Sensitive Species, and Species of Concern

- Gulf Sturgeon (*Acipenser oxyrinchus desotoi*) [Species of Special Concern]
- Bald Eagle [Bald Eagle and Golden Eagle Protection Act]
- Reticulated Flatwoods Salamander (*Ambystoma bishopi*) [Species of Special Concern]

In addition, the following state-listed species were assessed due to their local importance in coordination with the Florida Fish and Wildlife Conservation Commission (FWC):

- Gopher Tortoise (*Gopherus polyphemus*) [State-Threatened]
- Florida Black Bear (*Ursus americanus floridanus*) [State-Threatened]
- Pine Barrens Treefrog (*Hyla andersonii*) [Species of Special Concern]
- Alligator Snapping Turtle (*Macrochelys temminckii*) [Species of Special Concern]
- Florida Burrowing Owl (*Athene cunicularia floridana*) [Species of Special Concern]
- Florida Pine Snake (*Pituophis melanoleucus mugitus*) [Species of Special Concern]
- Gopher Frog (*Rano capito*) [Species of Special Concern].

Critical Habitat

- None.

¹ There are no species listed as “Proposed” or “Candidate.”

This report assesses potential impacts on federally-listed species resulting from the widening of State Road 123 (SR 123) from north of SR 85S to SR 85N, from a two-lane rural undivided roadway to a four-lane divided facility, within Eglin Air Force Base (AFB), Florida. The Lead Agency for this action is the Federal Highway Administration (FHWA), with the U.S. Department of Air Force, Eglin AFB as the Cooperating Agency. This Biological Assessment is based on data from multiple sources including the Florida Natural Area Inventory (FNAI) (**Appendix A**), field investigation (**Appendix B**), and data from personnel at the U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FWC), and Eglin AFB (**Appendix C**).

This Biological Assessment is prepared based on agency coordination (**Appendix D**). Formal consultation pursuant to Section 7 of the Endangered Species Act (ESA) was requested in an USFWS memo dated March 12, 2009 in response to agency review of the project's *Wildlife and Habitat Report* (January 2009). Formal consultation with USFWS was initiated by FHWA on October 20, 2010. In response, this Biological Assessment has been revised on agency input from USFWS (December 2010) and from Eglin AFB (March 2011).

1.1 PURPOSE OF THE PROPOSED ACTION

The purpose of the project is to improve capacity and safety along an existing bypass corridor. SR 123 is a two-lane, north-south roadway which facilitates access between Fort Walton Beach and Eglin Air Force Base to the south, and the greater Crestview area to the north. SR 123 is a Strategic Intermodal System (SIS) corridor, and is a component of the Florida Intrastate Highway System (FIHS). SR 123 is also a Hurricane Evacuation Route.

1.2 NEED FOR THE PROPOSED ACTION

The existing roadway is a rural two-lane undivided highway with two alternating sections of passing lane. The existing lanes are 12 feet in width, with eight-foot graded shoulders, including five-foot paved shoulders. The adopted Level of Service (LOS) standard for SR 123 is LOS C. The roadway is currently operating at LOS D in the off-peak direction and LOS F in the peak direction with an average of LOS F for two directions. By 2013 & 2033, the average LOS for the project alignment is expected to be LOS F if no improvements are made. The periods of LOS F will lengthen in duration as traffic volumes increase. Growth in the area is anticipated to further increase as a result of the 2005 Base Realignment and Closure Commission decision to expand the mission of Eglin AFB to house the Joint Strike Fighter Integrated Training Complex, and the U.S. Army's 7th Special Forces Group and the Defense Threat Reduction Agency. Crash data from Florida Department of Transportation, District 3 (FDOT3) Safety Program Manager indicate SR 123 is experiencing more accidents than would be expected for this type of facility. The distribution of crashes indicates a disproportionate amount of rear-end crashes, a problem typically associated with insufficient capacity on a two-lane roadway.

2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1 PROPOSED ACTION

The proposed project involves widening SR 123 between SR 85S and SR 85N from a two-lane rural undivided roadway to a four-lane divided facility with paved shoulders. The project termini are north of SR 85S, and SR 85N. At the southern limit, the project connects to a proposed interchange at SR 123 and SR 85S (as a separate project under FPID 220231-1). At the northern limit, the project connects to SR 85N. The project is in Okaloosa County (**Figure 1, Figure 2**), within the Eglin Air Force Base Reservation and consists primarily of forested natural areas with some pine plantations and utility/industrial land uses (waste water spray field), in a topography that is gently rolling (from about 20 feet above mean sea level to about 100 feet above mean sea level) as defined by the topographic features associated with Tom's Creek and Turkey Creek (**Figure 3**). The project is located within the Choctawhatchee Bay Watershed (USGS Unit Number 03140102) and crosses two secondary drainage basins: Tom's Creek Basin (approximately 5,124 acres) in the southern portion, and the much larger Turkey Creek Basin (approximately 17,233 acres) in the northern portion.

The widening includes the construction of new two-lane bridges at Tom's Creek and Turkey Creek, utilizing the existing bridges for the remaining two lanes of traffic (photos in **Appendix B**). Additionally, the box culvert at the unnamed tributary to Turkey Creek will be replaced as further discussed below. A grade-separated interchange at the intersection of SR 85N and SR 123N is also included. The total project length is approximately five miles. The FDOT standard four-lane rural typical section, with a 64-foot median, is proposed. Drainage is provided in the median and in roadway ditches. The project also includes the construction of stormwater management facilities.

In existing conditions, a 10-foot wide x 6-foot high x 156-foot long box culvert exists under SR 123 for an unnamed tributary of Turkey Creek fed by an upstream seep (photos in **Appendix B**). The culvert is currently heavily silted, obstructing fish movement and affecting upstream and downstream conditions. To avoid impact to the Okaloosa Darter, a federally threatened species, two 75-foot single span bridges are proposed as a replacement for the culvert. See Section 3.2 for an assessment of alternatives considered.

Figure 1: Study Area and Location



Figure 2: Location of SR 123

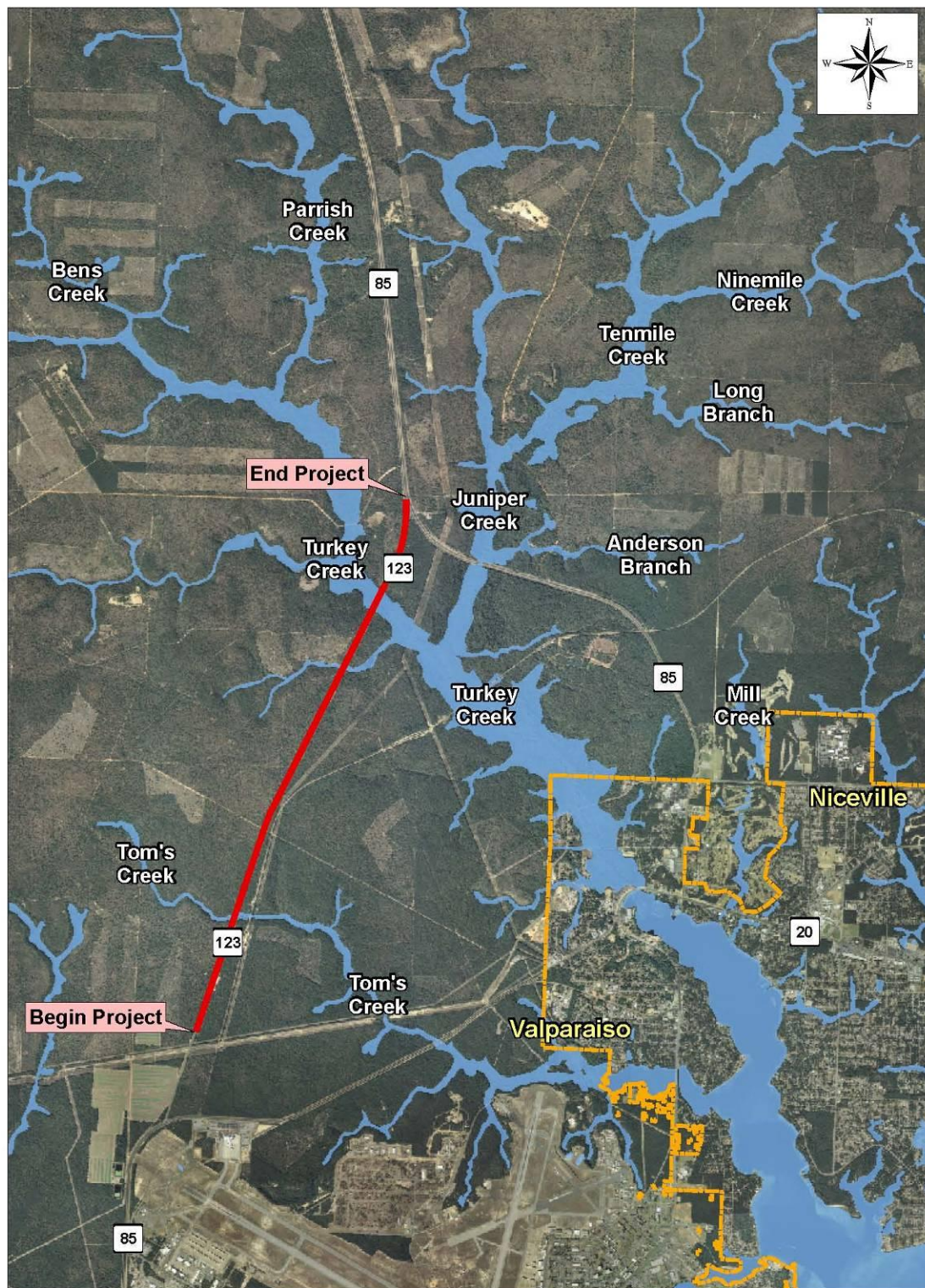
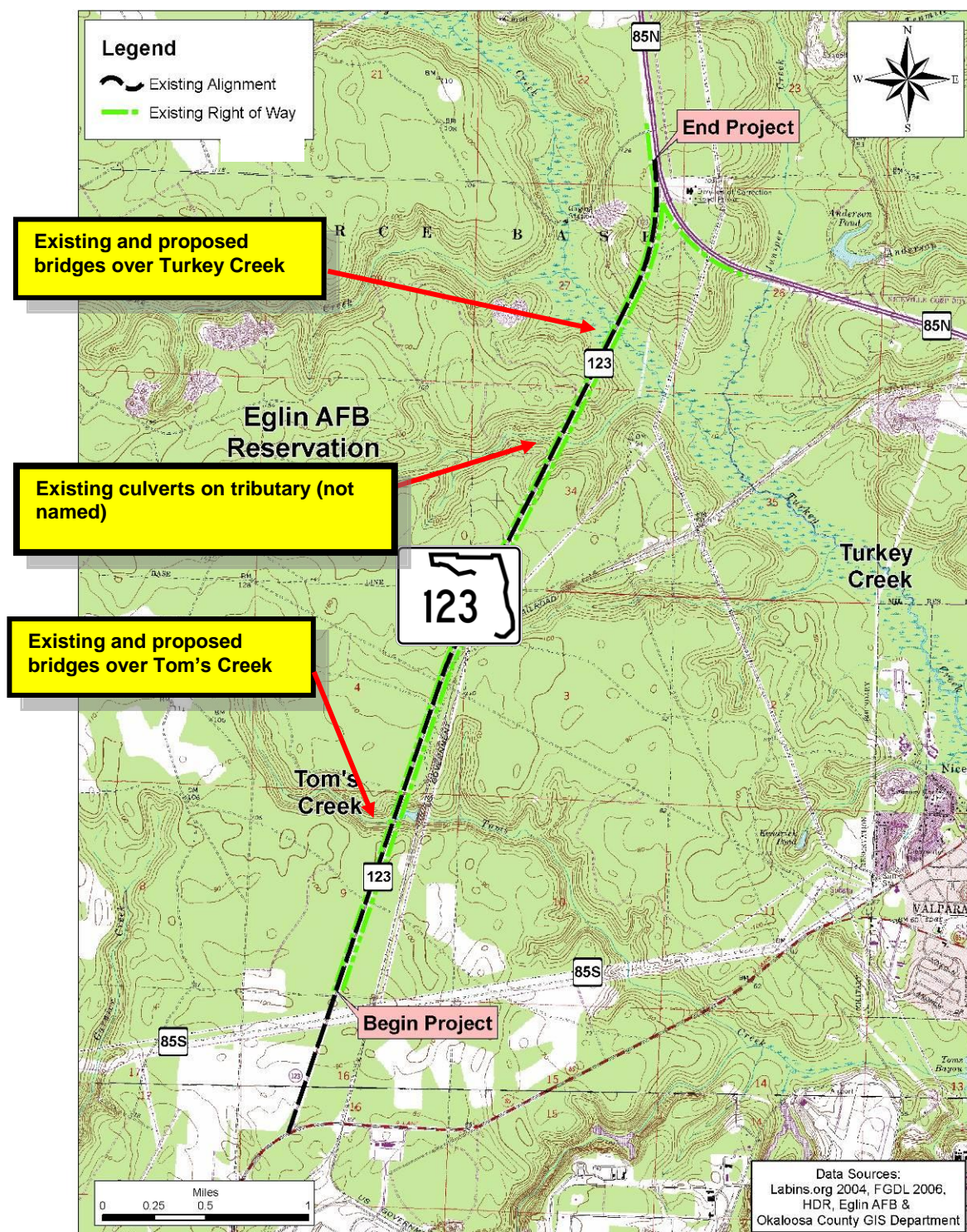


Figure 3: Topography and Stream Crossings Along Project Alignment



2.2 ALTERNATIVE ALIGNMENTS

Three alignments have been given consideration, designated Alternative 1, Alternative 2, and Alternative 3.

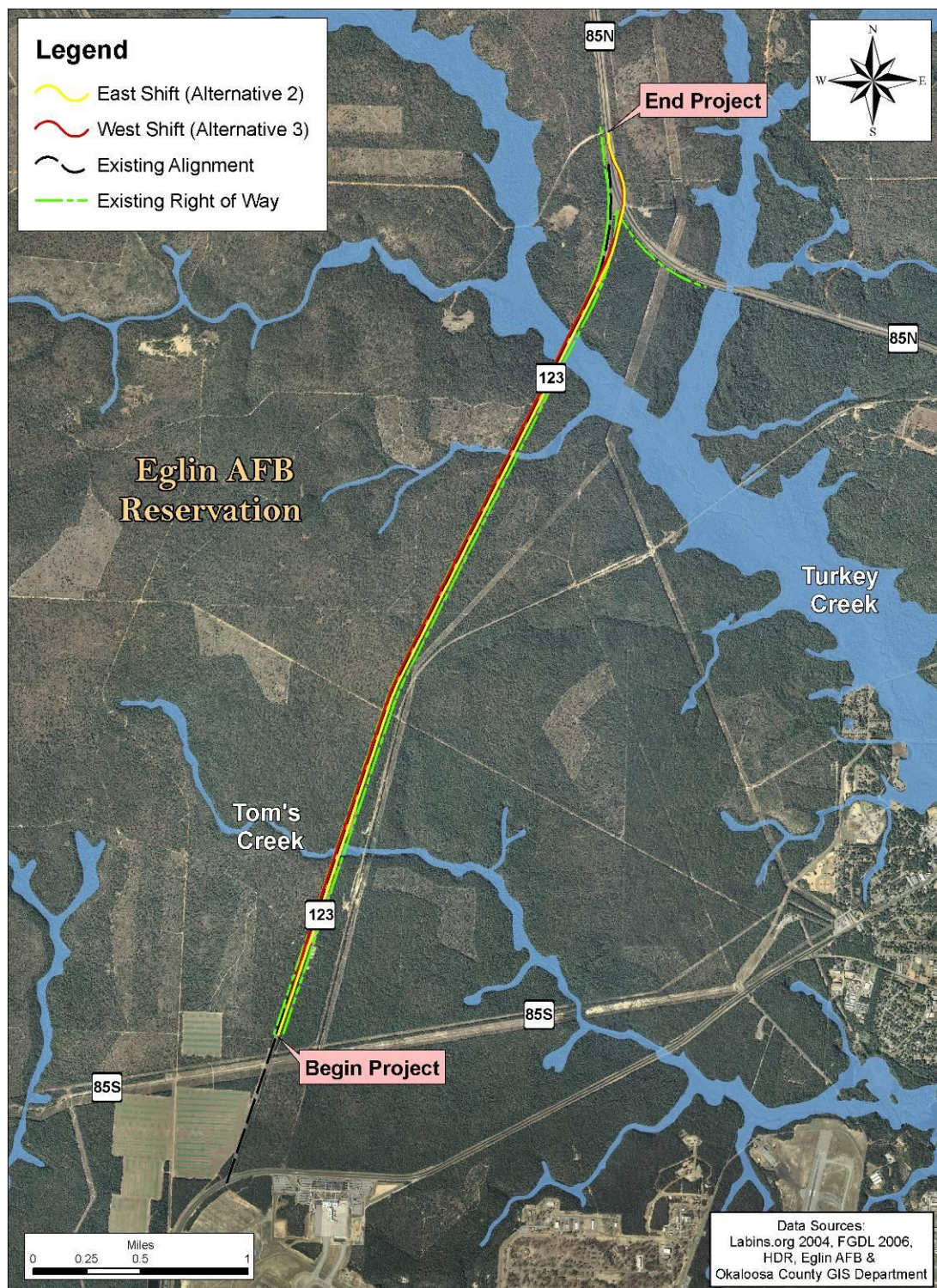
Alternative 1 follows the centerline of existing SR 123. This alternative identifies the existing project corridor, providing a basis for coordination with regulatory agencies and the public. Further analysis has resulted in the development of Alternatives 2 and 3 (**Figure 4**) along the same study corridor. As Alternatives 2 and 3 overlay and supersede Alternative 1, Alternative 1 has been eliminated from further consideration.

Alternative 2 (**Figure 5**) is east-shifted and locates the future southbound lanes over the existing lanes, thus making use of existing pavement, road bed, bridge structures and storm drainage wherever possible.

Alternative 3 (**Figure 6**) is west-shifted and locates the future northbound lanes over the existing lanes, thus making use of existing pavement, road bed, bridge structures and storm drainage wherever possible. Alternative 3 would have similar benefits with regard to pavement, bridges and storm drainage described above for Alternative 2. Alternative 3 was introduced following utility coordination on the project to minimize impacts to an existing 30" water main and an existing fiber optic cable, both located inside the east right-of-way line.

Pending incorporation of additional public input to be received on the draft Environmental Assessment, Alternative 3 is the Locally-Preferred Alternative.

Figure 4: East- and West-Shift Alignment Alternatives



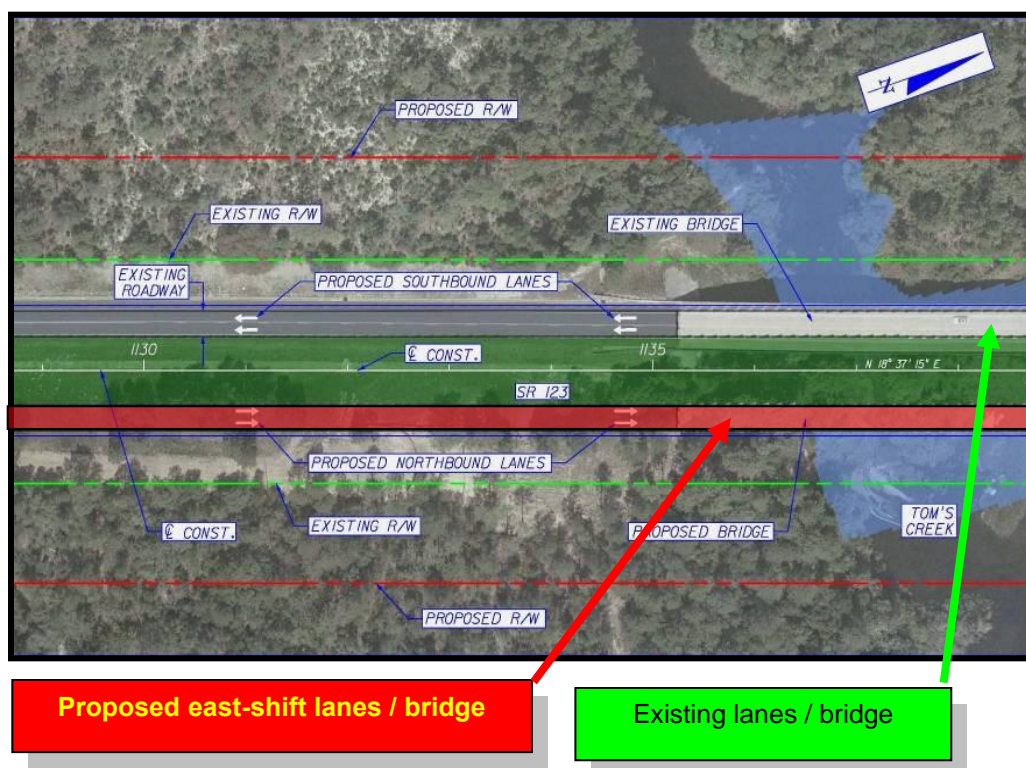


Figure 5: Alternative 2 (East-Shift)

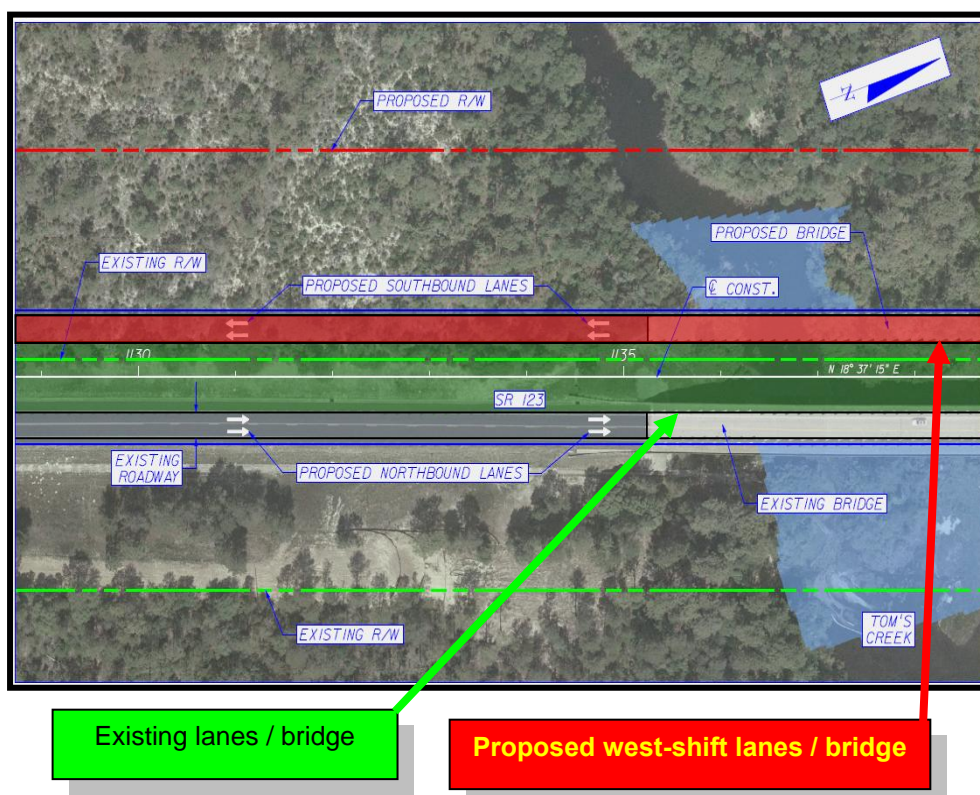


Figure 6: Alternative 3 (West-Shift)

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3.0 BIOLOGICAL ASSESSMENT AND EVALUATION

Data from the FNAI² were obtained, followed by field investigations by Environmental Scientists in the latter half of 2007 to establish wetland lines, identify threatened and endangered species, and to identify and consider any additional environmental issues. Pedestrian transects within the alignment identified listed species and their habitats as well as characterizing the existing communities and land use. Field observations found no threatened or endangered species within the project alignment. However, six federally-listed species are known or have potential to occur within the project area as listed in **Table 1** below. **Bold** font indicates species further evaluated in this Biological Assessment. In addition, habitat exists along the corridor that has the potential to support many of the species listed below. Habitat types along the project alignment as identified by FNAI consists of upland hardwood forest, scrub, sandhill, seepage streams, and floodplain forest, including wetlands and open streams in a rolling topography. Currently, there is no federally-designated Critical Habitat located along the project alignment. Although this Biological Assessment is prepared under the federal ESA, Table 1 also provides state-listed species, further analyzed in the project's *Wildlife and Habitat Report*. However, the focus of this Biological Assessment remains federally-listed species pursuant to Section 7 of the ESA. Following **Table 1**, a discussion of the federally-listed species is provided.

TABLE 1. FEDERAL / STATE, THREATENED / ENDANGERED SPECIES THAT MAY OCCUR IN THE PROJECT ALIGNMENT				
Species		Listing Status	Habitat	Potential
<u><i>Fish</i></u>				
Okaloosa Darter	<i>Etheostoma okaloosae</i>	FT/SE	Creeks and small freshwater tributaries	Documented *
Gulf Sturgeon	<i>Acipenser oxyrinchus desotoi</i>	FT, SSC	Open water	Low
Blackmouth Shiner	<i>Notropis melanostomus</i>	SE	Blackwater streams	Likely
Bluenose Shiner	<i>Pteronotropsis welaka</i>	SSC	Blackwater streams	Likely
<u><i>Amphibian and Reptiles</i></u>				
Eastern Indigo Snake	<i>Drymarchon couperi</i>	FT/ST	Mesic flatwoods	Likely
Reticulated Flatwoods Salamander	<i>Ambystoma bishopi</i>	FE/SS	Xeric pine flatwoods/ isolated cypress ponds	Low
Gopher Tortoise	<i>Gopherus polyphemus</i>	ST	Xeric uplands/pine flatwoods	Potential
Alligator Snapping Turtle	<i>Macrochelys temminckii</i>	SSC	Swamps/marshes	Potential
Florida Pine Snake	<i>Pituophis melanoleucus mugitus</i>	SSC	Xeric pine flatwoods	Documented
Gopher Frog	<i>Rana capito</i>	SSC	Xeric upland forest/marshes	Potential
Pine Barrens Treefrog	<i>Hyla andersonii</i>	SSC	Seepage bogs	Documented

* See Appendix C, Table C-2 for Darter counts at project location based on USFWS sampling data. FNAI data indicates the nearest documented Darter location at the confluence of Turkey Creek and Juniper Creek approximately one mile to the southeast of the project alignment.

² FNAI data were originally obtained in 2007, and updated May 2009.

TABLE 1 (CONTINUED). FEDERAL/STATE THREATENED AND ENDANGERED SPECIES THAT MAY OCCUR IN THE PROJECT ALIGNMENT

Species	Listing Status	Habitat	Potential
<u>Birds</u>			
Red-cockaded Woodpecker	<i>Picoides borealis</i> FE, SSC	Old growth pine forests/sandhill	Potential *
Wood Stork	<i>Mycteria americana</i> FE, SE	Flooded wetlands	Low
Bald Eagle	<i>Haliaeetus leucocephalus</i> BGEPA	Close to bodies of water	Potential
Florida Burrowing Owl	<i>Athene cunicularia floridana</i> SSC	Dry prairie, sandhill	Potential
Tri-colored Heron	<i>Egretta tricolor</i> SSC	Flooded wetlands	Potential
White Ibis	<i>Eudocimus albus</i> SSC	Flooded wetlands	Potential
<u>Mammals</u>			
Florida Black Bear	<i>Ursus americanus floridanus</i> ST	Variety of forested habitats	Likely **
<u>Plants</u>			
Alabama Spiny-pod	<i>Matelea alabamensis</i> SE	Mixed-pine-hardwood forest	Potential
Ashe's Magnolia	<i>Magnolia ashei</i> SE	Upland hardwood forest	Documented
Coville's Rush	<i>Juncus gymnocarpus</i> SE	Bogs, acid swamps	Documented
Florida Flame Azalea	<i>Rhododendron austrinum</i> SE	Upland hardwood forest	Low Potential
Green Adder's-mouth	<i>Malaxis unifolia</i> SE	Moist hammocks, prairies	Likely
Hairy-peduncled Beakrush	<i>Rhynchospora crinipes</i> SE	Wet stream banks	Documented
Hummingbird Flower	<i>Macranthera flammea</i> SE	Seepage slopes, streamside, bogs	Potential
Incised Groove-bur	<i>Agrimonia incisa</i> SE	Sandhill	Potential
Karst Pond Xyris	<i>Xyris longisepala</i> SE	Sandhill pond margin	Potential
Panhandle Lily	<i>Lilium iridollae</i> SE	Floodplain forest, seepage slope	Documented
Panhandle Meadowbeauty	<i>Rhexia salicifolia</i> SE	Pond and marsh margins	Potential
Panhandle Spiderlily	<i>Hymenocallis henryae</i> SE	Wet flatwoods, cypress edge	Potential
Pondspice	<i>Litsea aestivalis</i> SE	Edge of ponds, baygalls	Potential
Primrose-flowered Butterwort	<i>Pinguicula primuliflora</i> SE	Seepage slope, bog	Potential
Small-flowered Meadowbeauty	<i>Rhexia parviflora</i> SE	Seepage slope, marsh edge	Potential
West's Flax	<i>Linum westii</i> SE	Wet flatwoods, bog, pond edge	Potential

* FNAI 2009 reports the potential for Red-cockaded Woodpecker as "Likely." However, further investigation as documented in this Biological Assessment finds no active Core Foraging Area. Therefore, "Likely" has been down-listed to "Potential."

** Documented vehicle / bear strikes have occurred and are further discussed in this Biological Assessment.

TABLE 1 (CONTINUED). FEDERAL/STATE THREATENED AND ENDANGERED SPECIES THAT MAY OCCUR IN THE PROJECT ALIGNMENT

Species		Listing Status	Habitat	Potential
Yellow Fringeless Orchid	<i>Platanthera integra</i>	SE	Floodplain forest, stream bank	Potential
Arkansas Oak	<i>Quercus arkansana</i>	ST	Mixed mesic hammock	Documented
Baltzell's Sedge	<i>Carex baltzellii</i>	ST	Steephead slope	Documented
Bog Button	<i>Lachnocaulon digynum</i>	ST	Seepage bog	Documented
Chapman's Crownbeard	<i>Verbesina chapmanii</i>	ST	Wet flatwoods, prairie	Potential
Curtiss' Sandgrass	<i>Calamovilfa curtissii</i>	ST	Flatwoods	Potential
Gulf Coast Lupine	<i>Lupinus westianus</i>	ST	Sand pine scrub	Potential
Hairy Wild Indigo	<i>Baptisia calycosa</i> var. <i>villosa</i>	ST	Hammocks	Documented
Harper's Yellow-eyed Grass	<i>Xyris scabrifolia</i>	ST	Bog	Documented
Large-leaved Jointweed	<i>Polygonella macrophylla</i>	ST	Coastal scrub	Documented
Naked-stemmed Panic Grass	<i>Panicum nudicaule</i>	ST	Sandhill, flatwoods	Documented
Piedmont Jointgrass	<i>Coelorachis tuberculosa</i>	ST	Pond and marsh margins	Potential
Pineland Hoary-pea	<i>Tephrosia mohrii</i>	ST	Pinelands	Documented
Pine-woods Bluestem	<i>Andropogon arctatus</i>	ST	Flatwoods, scrub	Potential
Sweet pitcherplant	<i>Sarracenia rubra</i>	ST	Wet prairies, bogs	Documented*
Southern Milkweed	<i>Asclepias viridula</i>	ST	Wet flatwoods, prairies	Potential
Spoon-leaved Sundew	<i>Drosera intermedia</i>	ST	Pond margins	Documented*
Toothed Savory	<i>Calamintha dentata</i>	ST	Sandhill	Potential

Table notes:

FE – federally endangered	FT - federally threatened	* - Observed during field investigations
SE - state endangered	ST - state threatened	
SSC - state special concern	BGEPA – Bald Eagle and Golden Eagle Protection Act	
Documented:	Rare species and natural communities documented within one-mile of the project.	
Documented*:	<u>Identified in the field during project field review</u>	
Documented-Historic:	Documented, but not observed within the last twenty years.	
Likely:	Likely to occur within one-mile based on suitable habitat and/or known occurrences.	
Potential:	The project lies within the known or predicted range of the species listed.	
Low:	No documented occurrences or desirable habitat present within one-mile of the project	

3.1 GULF STURGEON

Federally-listed as Threatened, and state-listed as Species of Special Concern (SSC), the Gulf Sturgeon (*Acipenser oxyrinchus desotoi*) spends most of its life cycle generally in the bays and portions of large rivers. Tom's Creek flows into Tom's Bayou, and Turkey Creek together with an unnamed tributary of Turkey Creek flow into Boggy Bayou. Both bayous are part of the Choctawhatchee Bay system. While no sturgeon have been documented in the project alignment and surrounding area, FNAI data indicate that the species is "likely to occur within one-mile of the project based on suitable habitat and/or known occurrences." However, the bridged crossings of Turkey Creek and Tom's Creek do not have the depth and velocity of flow to provide suitable habitat for the Gulf Sturgeon. Therefore, a low potential exists for impacts to the Gulf Sturgeon associated with the proposed project.

3.2 OKALOOSA DARTER

Existing Conditions

The Okaloosa Darter (*Etheostoma okaloosae*) is federally-listed as Threatened and state-listed as Endangered. The USFWS listed the Okaloosa Darter as Endangered on June 4, 1973 (38 FR 14678) and reclassified the status to Threatened on April 1, 2011 (76 FR 18087). The following discussion of Okaloosa Darter habitat and status incorporates current information from USFWS *Federal Register* publication on February 2, 2010.

The Okaloosa Darter (*Etheostoma okaloosae*) is found in six small Choctawhatchee Bay Basin tributaries located in the sandhills ecological association of the Eglin Reservation. Maintaining viable populations in all six basins is a goal of the current recovery plan (USFWS 1998). Two of these creeks, Tom's Creek and Turkey Creek (including an unnamed tributary of Turkey Creek) are bridged or have culverted crossings along the project alignment and contribute 34% of the total potential Okaloosa Darter habitat.

Okaloosa Darter habitat is sensitive to a variety of disturbances. USFWS finds that Okaloosa Darters typically inhabit the margins of moderate, to fast-flowing streams where detritus, root mats, and vegetation are present. Habitat loss or degradation has occurred from several factors including siltation, several small impoundments, and possibly domestic pollution. Erosion can increase siltation and imperil the darter's habitat, and its range has also been reduced by habitat modification and encroachment by the brown darter. Data have not shown collection of Okaloosa Darters in areas where there is no stream current, or in open sandy areas in the middle of a stream channel.

Management activities for this species involve erosion control measures within darter drainages such as the repair of culverts, range road maintenance, borrow pit closures, and the use of best management practices (BMPs). In order to protect the Okaloosa Darter, the quantity and quality of water in the streams should be protected. The *Formal Programmatic Biological Assessment for Road-Stream Crossing Elimination and Replacement* (Eglin AFB 2006) evaluated the potential impact to listed species through the programmatic elimination, replacement, and rehabilitation of road-stream crossings on Eglin AFB and committed to rehabilitation of stream habitats and improved stream crossings.³ There is a potential for impacts to the Okaloosa Darter as the proposed project plans to construct bridges across Tom's Creek and Turkey Creek, and replace the existing culvert with single span bridges at an unnamed tributary of Turkey Creek.

The Okaloosa Darter census data are presented in **Appendix C (Table C-1)** listing dates, locations, and darter counts. Darter counts along the project alignment are presented in **Appendix C (Table C-2)** for the following locations: Tom's Creek at SR 123, Turkey Creek at SR 123, and Turkey Creek tributary at SR 123.

Okaloosa Darter population trends in the project vicinity are generally erratic with periodic dips and spikes and spotty sampling. The Turkey Creek sampling site, though documenting consistent darter presence in the 1970s, has no data counts since 1978. However, more consistent sampling data are available at Eglin road 232 (6.9 river miles from Boggy Bayou), and Eglin road 637 (15.6 river miles from Boggy Bayou). Data from the Turkey Creek sample sites are presented in **Table 2** and graphically displayed in **Figure 8**.⁴ The graph in **Figure 8** presents data from multiple locations along Turkey Creek at various locations ranging from 0.1 to 18.6 river miles from Boggy Bayou, with over half of the data sites at 6.9 river miles. Notable data gaps are present (indicated with arrows) and the date distribution along the x-axis is not consistent. A logarithmic trend line has been plotted. However, with the gaps, the data may be insufficient to predict population trends.

³ This referenced document was ultimately *informal*. An amendment letter reduced impacts to the Okaloosa Darter to "Not Likely to Adversely Affect" with the exclusive use of bottomless culverts or bridges for darter streams.

⁴ The data were collected using a seine, snorkel, or dip net method by numerous sources, such as the USFWS, the US Geological Survey, (USGS), as well as university professors and their students for research purposes. The data were compiled by the USFWS and is presented in the tables below for use in determining whether the Proposed Action affects the survival and recovery of the species; and / or adversely modifies the habitat.

Figure 7: Okaloosa Darter Streams and Proposed Project Crossings

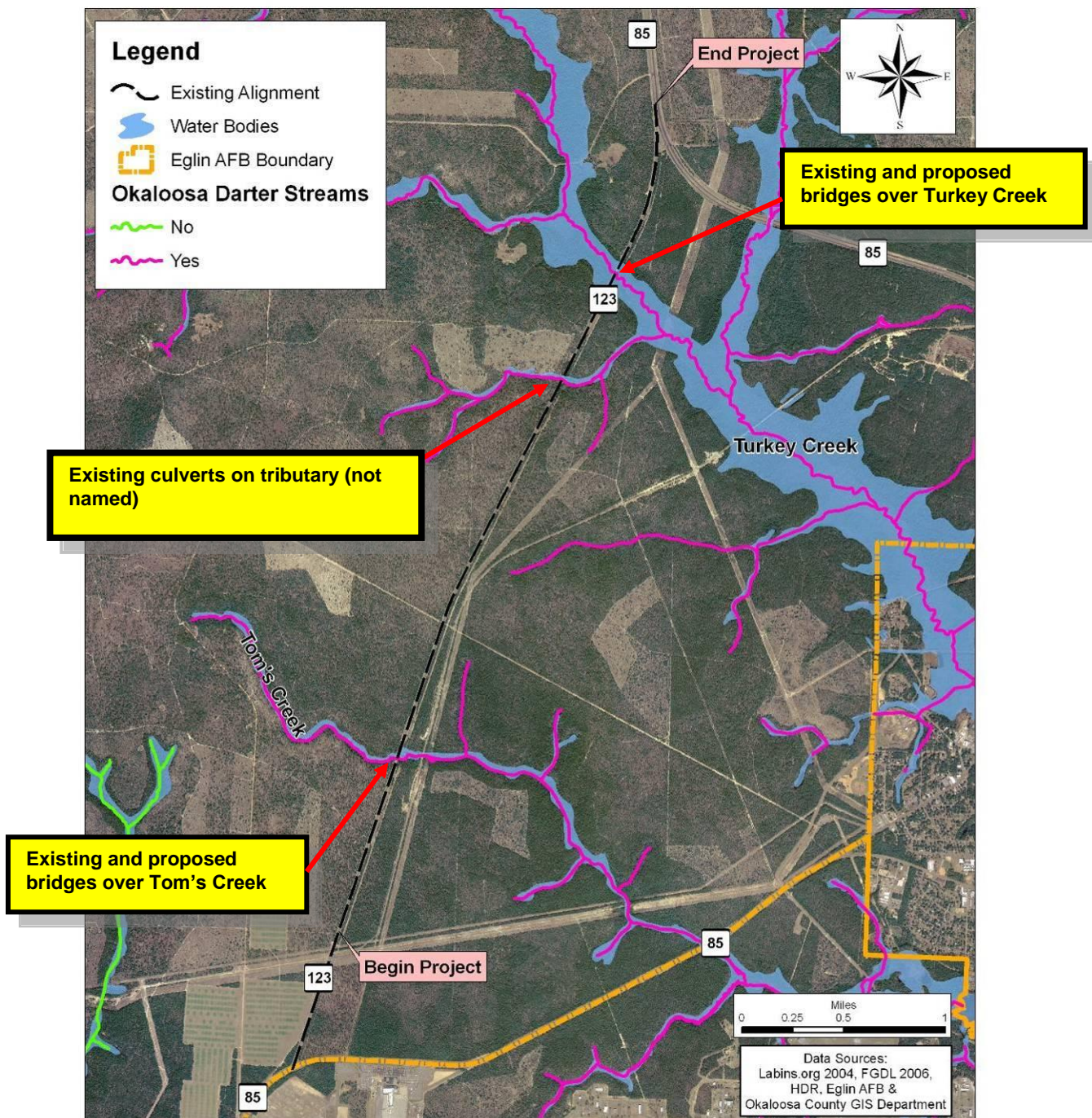
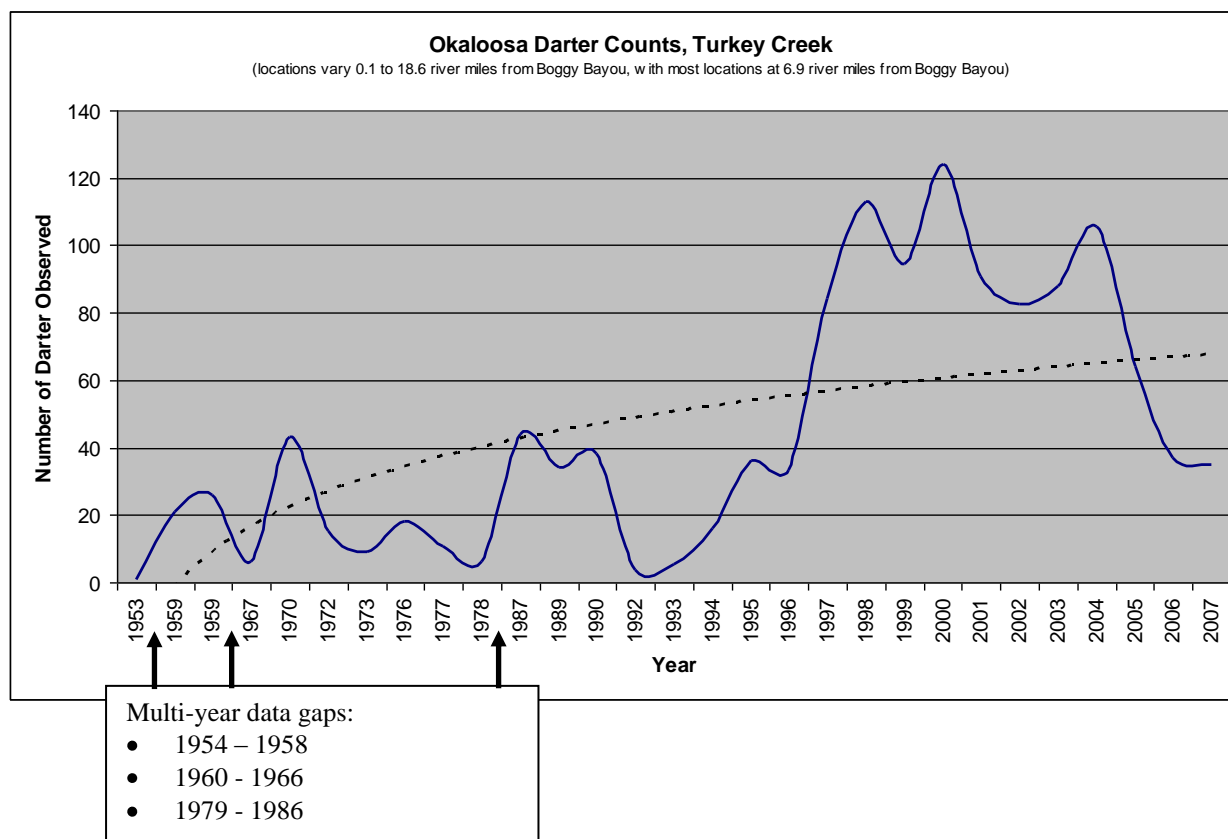


Table 2. Turkey Creek Okaloosa Darter Census

Average Darters per Year																	
Station / Year	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05
Eglin 232, 6.9 river miles from Boggy Bayou	53	38	*	*	*	16	40	28	71	77	79	56	64	62	63	104	85
Eglin 637, 15.6 river miles from Boggy Bayou	15	*	*	5	7	*	33	39	98	149	110	192	144	103	113	106	185

* no data. Source: USFWS - Bill Tate

Figure 8. Okaloosa Darter Census – Turkey Creek



The Tom's Creek site documents consistent sampling from 1951 through 2007, but with sporadic counts documenting presence in 1976 and 1990 only. Data from the Tom's Creek sample sites are presented in **Table 3** and graphically displayed in **Figure 9**.⁵ The graph in **Figure 9** presents

⁵ The data were collected using a seine, snorkel, or dip net method by numerous sources, such as the USFWS, the US Geological Survey, (USGS), as well as university professors and their students for research purposes. The data were compiled by the USFWS and is presented in the tables below for use in determining whether the Proposed Action affects the survival and recovery of the species; and / or adversely modifies the habitat.

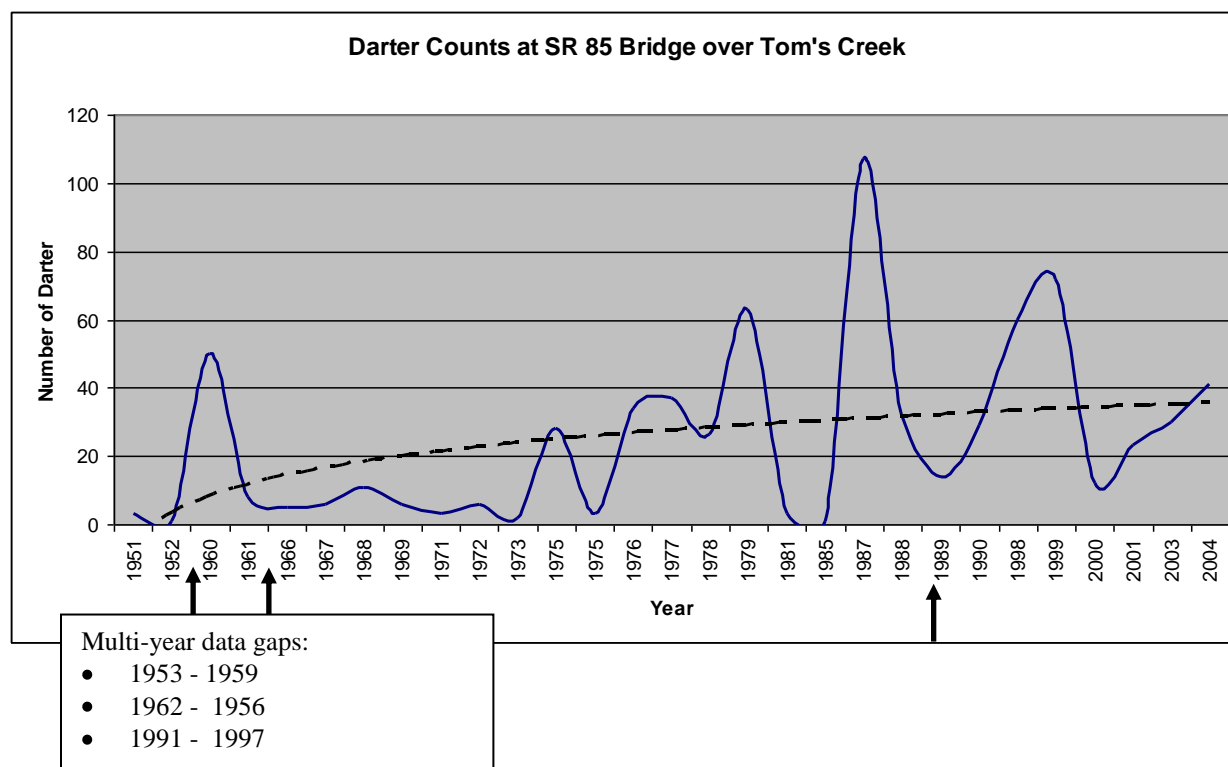
data from multiple locations along Tom's Creek at various locations including SR 85 and at SR 123. Notable data gaps are present (indicated with arrows) and the date distribution along the x-axis is not consistent. A logarithmic trend line has been plotted. However, with the gaps, the data may be insufficient to predict population trends. Even so, it is likely that the darter has a current presence in the vicinity of the SR 123 crossings as evidenced by sampling data in **Appendix C, Table C-2** which documents darter presence on the project alignment.

Table 3. Tom's Creek Okaloosa Darter Census

Average Darters per Year																					
Station / Year	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07
SR 85	107	32	14	29	*	*	*	*	*	*	*	60	72	12	23	*	30	41	*	*	*
SR 123	*	*	*	20	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Eglin road 7.2 km upstream from mouth (no road number)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	94	140	55	37

* no data. Source: USFWS - Bill Tate

Figure 9. Okaloosa Darter Census – Tom's Creek at SR 85



Discussion of Proposed Conservation Measures

A potential threat to the Okaloosa Darter is siltation caused by increasing stream sedimentation. Sedimentation and siltation degrade fish habitat by covering spawning areas and removing oxygen from aquatic insects and plants. Increased turbidity from sedimentation can also change water temperatures, reduce light penetration, and interfere with gill functions of fish. Okaloosa Darters typically inhabit the margins of moderate to fast flowing streams where detritus, root mats, and vegetation are present (USFWS 2010). Potential impacts at Tom's Creek and Turkey Creek stream crossings should be minimized by construction techniques limiting the impacts associated with fill material and subsequent erosion and sedimentation. During construction, it is likely that the darters will migrate upstream or downstream and away from any potential areas of impact. The bridge deck will increase the shading of these streams. Shading, however, is not expected to cause adverse impacts to the Okaloosa Darter or its habitat. The creeks with Okaloosa Darters are generally shaded over most of their courses (USFWS 2010). Commitments to water quality protection measures are made at the conclusion of this document to reduce the potential for adverse effect to the Okaloosa Darter.

Initial communication with the USFWS in response to USFWS review of the project's *Wildlife and Habitat Report*, and inter-agency meetings, resulted in a several recommendations for consideration to offset impacts to the Okaloosa Darter (**Appendix D**). Each of these are further discussed below.

1. Bankfull Plus 10% and In-Stream Pier Placement

As established during agency coordination dated March 10, 2008, options at Tom's Creek, Turkey Creek, and the un-named tributary to Turkey Creek should span "bankfull plus 10%" to protect stream habitat and allow wildlife passage. In addition, in-stream pier placement should be minimized. At Tom's Creek and Turkey Creek, "bankfull plus 10%" has been estimated at 12 feet, and 35 feet respectively, based on measurements in the field. Precast concrete bridges are anticipated at Tom's Creek and Turkey Creek. Although longer spans are available and potentially cost feasible, a maximum span of 120 feet is preferred at Tom's Creek and Turkey Creek for constructability based on conceptual review of bridge options at the sites.

The location of piers and length of spans will be determined during design. However, preliminary analysis indicates that pier placement within Tom's Creek and Turkey Creek can be avoided. FDOT will coordinate the final location of piers at Tom's Creek and Turkey Creek with USFWS during design with the objective of spanning bankfull plus 10% as defined above and avoiding in-stream pier placement if practical. In the event in-stream pier placement cannot be avoided with standard design and cost feasible construction, piers would at a minimum mirror the existing bridges and the pier locations would be coordinated with USFWS to minimize impacts.

At the unnamed tributary to Turkey Creek, "bankfull plus 10%" has been established as a width of 11 feet based on field observations 100 feet upstream and 100 feet downstream of the existing culvert. The proposed action at the unnamed tributary to Turkey Creek is replacement of the culvert with two 75-foot single span bridge structures that will provide an opening between abutments of 50 feet. In this regard, the bridges at the unnamed tributary to Turkey Creek will span bankfull plus 10% and avoid in-stream pier placement.

2. Culvert Replacement with Span at Un-named Tributary to Turkey Creek

Where SR 123 crosses an un-named tributary of Turkey Creek (**Figure 7**), an existing culvert conveys limited stream flow under the road (**Appendix B**, Page B-3, Photo 6; and page B-7, photo 22). This culvert has retained heavy silt deposits which likely restrict / prevent darter movement. The existing culvert structure is 10 feet wide by 6 feet high by 156 feet long. The existing culvert is approximately 75% silted-in, but has sufficient hydraulic capacity to accommodate existing stream flow.

The FDOT preliminary proposal for crossing the un-named tributary to Turkey Creek was to de-silt and extend the existing culvert. Initial feedback from USFWS (March 2009, **Appendix D**) recommended replacement of the culvert with a bridge span structure to benefit the Okaloosa Darter and provide opportunities for wildlife passage.

A draft Biological Assessment was submitted in September 2010 evaluating three options including replacing the culvert with a bridge span (150'-210'), extending the existing culvert, and replacing the existing culvert and adding a new culvert (which was indicated as preferred). Pursuant to written comments dated December 14, 2010, USFWS stated that "construction of a bridge span avoids impacts to Okaloosa Darter and continues to be the first preference of the Service." The December 14, 2010 comments also stated that "the service continues to be concerned that the use of a four sided culvert could result in detrimental effects to the channel without proper placement and maintenance" but indicated that a bottomless culvert would be preferable to a four-sided culvert. By memorandum from Department of the Air Force to FHWA dated March 2011, Eglin AFB as landowner and Cooperating Agency recommended a bridge span as a preferred alternative, and expressed their opinion that a four sided culvert would be insufficient to ensure the continued recovery of the Okaloosa Darter.

This Biological Assessment develops more detailed costs and environmental impacts for the following options:

- Replacing the culvert with a multi span bridge structure (Multi-Span Bridge Option)
- Replacing the culvert with a single span bridge structure (75 Foot Bridge Option)
- Replacing the culvert with a 20' wide x 11' tall three sided box culvert (Three Sided Culvert Replacement Option)
- Replacing the culvert with a 20' wide x 11' tall four sided box culvert (Four Sided Culvert Replacement Option)
- Extending the existing culvert (Four Sided Culvert Extension Option).

A sketch of the 75 Foot Bridge Option is provided as **Figure 10**. Sketches of the Three Sided Culvert Replacement Option are provided in **Figure 11** and **Figure 12**. Cost estimates for all options (**Appendix F**) include excavation, embankment, roadway, shoulder gutter, guardrail, sod, lighting, maintenance, and mitigation from common begin and end points (Station 1243+02 to Station 1245+12) to allow comparison. The 75 Foot Bridge Option is proposed as the Locally-Preferred Alternative as an avoidance measure, but information is presented on all alternatives for comparison. Environmental impacts evaluated include impacts to wetlands and

streambed as a result of fill and shading. Consistent with U.S. Army Corps of Engineers (USACE) and Florida Department of Environmental Protection (FDEP) methodology, impacts are quantified in terms of the Uniform Mitigation Assessment Method (UMAM) Functional Loss (FL). All UMAM scores provided should be considered approximate until approved by the regulatory agencies during the permitting process. UMAM Relative Functional Gain (RFG) values for stream/wetland restoration are based upon methodology established during consultation with the USFWS, Eglin AFB, USACE, and FDEP for the Tom's Creek Restoration Project located adjacent to SR 123.

The estimated cost of mitigation is approximate based on similar projects completed for Mid-Bay Bridge Authority on Eglin AFB as compensation for impacts to darter streams on the reservation. There are two project examples: (1) Tom's Creek, and (2) Eglin AFB dirt road. Tom's Creek included removal of an existing culvert, excavation of fill, and restoration of approximately 200 feet of stream channel at a cost of \$160,000. The second example was a minor culvert replacement on an Eglin AFB dirt road at a cost of \$60,000. The minor culvert replacement project met requirements for Okaloosa Darter stream mitigation, but not for wetland mitigation. In this regard, the cost of wetland mitigation was added to the minor culvert replacement cost based on criteria established by F.S. 373.4137. For purposes of this cost estimate, the total cost of the minor culvert replacement was adjusted to \$60,000 + $(\$102,959/\text{acre} \times 0.23 \text{ acres}) = \$83,680$.

To compare the cost of maintenance, we computed the present value of yearly maintenance over a service life of 75 years. The cost of maintenance was estimated at \$1,100/year for the bridge and \$750/year for the culvert, with the cost of maintenance escalating at a rate of 10% per year, based on data supplied by FDOT District 3 Structures. For purpose of converting the geometric sequence to present value, we assumed an average interest rate of 8%.

Removal of this existing culvert would result in temporary disturbance impacts to the un-named tributary of Turkey Creek including localized siltation and bank disturbance. Short-term water quality and habitat degradation and temporary blockage of fish passage may cause indirect impacts in feeding patterns, respiratory functioning, and habitat use throughout the existing stream habitat. Sedimentation from soil disturbance in and near the stream may interfere with proper respiratory functioning, smother aquatic vegetation and woody debris that darters use as habitat, and reduce channel capacity. Mitigation of these temporary impacts would be addressed through the project's restoration plan.

Multi-Span Bridge Option

The Multi-Span Bridge Option consists of replacing the culvert with two multi-span bridges that would be 150 feet in length (northbound) and 210 feet in length (southbound) at an estimated cost of \$2,700,000. No hydraulic or transportation benefits would result from this structure, and it provides no additional habitat protection as compared to the 75-foot Bridge Option. Therefore, no detailed analysis is provided, and the option is not advanced as a viable alternative.

75 Foot Bridge Option

The 75 Foot Bridge Option consists of two 75' long x 43' wide precast concrete beam bridges which could be constructed without encroachment in the streambed (**Figure 10**). Allowing for abutments and the protection of abutments, the structure would provide 50 feet of open space which meets the bankfull plus 10% requirement. The structure would require 9,400 ft² of mechanically stabilized earth (MSE) wall to accommodate vertical elevation differences at the site. This option would result in 0.094 acres of fill impact to wetlands for abutments resulting in a FL of 0.09. The bridge would also create shading impacts of 0.039 acres with a FL of 0.01. The total FL for this option is 0.1. The removal of the existing culvert would create 0.22 acres of new stream/wetland area. With a full stream restoration of this area, a UMAM RFG of 0.14 could be obtained, which would result in a 0.04 net RFG. This option would allow wildlife movement, and increase potential habitat for the Okaloosa Darter. The cost of the 75 Foot Bridge Option would total \$1,484,501.

Three Sided Culvert Replacement Option

The Three Sided Culvert Replacement Option consists of a 20' wide x 11' tall x 220' long culvert supported on piling (**Figure 11** and **Figure 12**). A 20' width was selected to span "bankfull plus 10%," provide a terrestrial passage for wildlife movement under the road, and allow migration of the streambed. An 11' height was selected to allow natural light. The option would require temporary sheet piling for constructability and permanent sheet piling along the length of the culvert for long term scour protection. The option would also require provision for natural and/or artificial lighting. Extension of the culvert length would result in the conversion of stream channel (and Okaloosa Darter habitat) to culvert, which would require offsite habitat restoration. The three sided culvert would result in 0.23 acres of fill impacts to wetlands and stream channel resulting in a FL of 0.21. The cost of the Three Sided Culvert Replacement option would total \$1,202,890 - \$1,675,210 with temporary and permanent sheet piling. During design, it may be possible to eliminate the permanent sheet piling following a scour analysis, which would reduce the cost.

Four Sided Culvert Replacement Option

The Four Sided Culvert Replacement Option consists of a 20' wide x 12' tall x 220' long four sided box culvert. A 20' width was selected to span "bankfull plus 10%," provide a terrestrial passage for wildlife movement under the road, and allow migration of the streambed. A 12' height was selected to allow natural light. The bottom of the culvert would be set below the existing streambed to facilitate formation of a natural sand bottom along the culvert. Extension of the culvert length would result in the conversion of stream channel (and Okaloosa Darter habitat) to culvert, which would require offsite habitat restoration. In addition, "floodplain drains" would be required adjacent to the culvert to reduce the likelihood of a flood event scouring all sediment from the culvert, and provision for natural and/or artificial lighting would be needed. The option would result in 0.23 acres of fill impacts to wetlands and stream channel resulting in a FL of 0.21. The cost of the Four Sided Culvert Replacement option would total \$1,462,040 - \$1,502,360. This option is not consistent with the USFWS/Eglin Air Force Base Formal Programmatic Biological Assessment for Road-Stream Crossing Elimination and Replacement (November 2006) which requires existing culverts to be replaced with bridges or arched structures that allow natural streambed formation below the crossing structure in Okaloosa Darter streams.

Four Sided Culvert Extension Option

The Four Sided Culvert Extension Option involves de-silting and extending the existing culvert. Extension of the existing culvert would provide a functional hydraulic solution, but raises concern because the Okaloosa Darter would not likely use the existing silted-in, dark structure, and would be less likely to use an extended structure. In addition, efforts to de-silt the existing box culvert could provoke a stream bed response upstream of the structure. Therefore, no detailed analysis is provided, and the option is not advanced as a viable alternative.

Summary

A summary table is provided below (**Table 4**). Supporting cost data are provided in **Appendix F. The 75 Foot Bridge Option is advanced as the Locally-Preferred Alternative.**

Table 4. Comparison of Crossing Options

<i>Option</i>		<i>Bridge</i>	<i>Culvert</i>	
		<i>75-Foot Bridge</i>	<i>Three Sided Culvert</i>	<i>Four Sided Culvert</i>
Dimensions		75' x 43' (each direction)	20' x 11' x 220'	20' x 12' x 220'
Impacts	Direct (ac)	0.094 ac	0.230 ac	0.230 ac
	Shading (ac)	0.039 ac	none	none
	UMAM Net Relative Functional Gain/(Loss)	0.040	(0.21)	(0.21)
Costs	Construction	\$1,321,501	\$ 958,210 - \$1,354,210	\$1,181,360
	Maintenance	\$163,000	\$111,000	\$111,000
	Lighting	n/a	\$50,000	\$50,000
	Potential Estimated Offsite Mitigation	-0-	\$83,680 - \$160,000	\$83,680 - \$160,000
	Total Estimated Cost	\$1,484,501	\$1,202,890 - \$1,675,210	\$1,426,040 - \$1,502,360
Comments		Optimized bridge with retaining walls.	Delta cost reflects permanent sheet piling for scour protection.	Assumes “floodplain drains” in construction cost.

Figure 10. 75-Foot Single Span Bridge (Plan and Elevation Views)

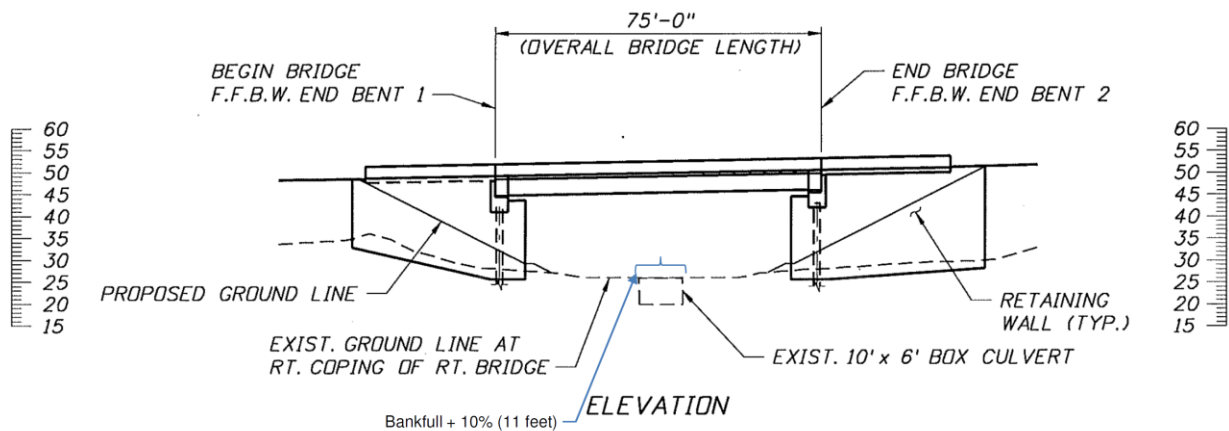
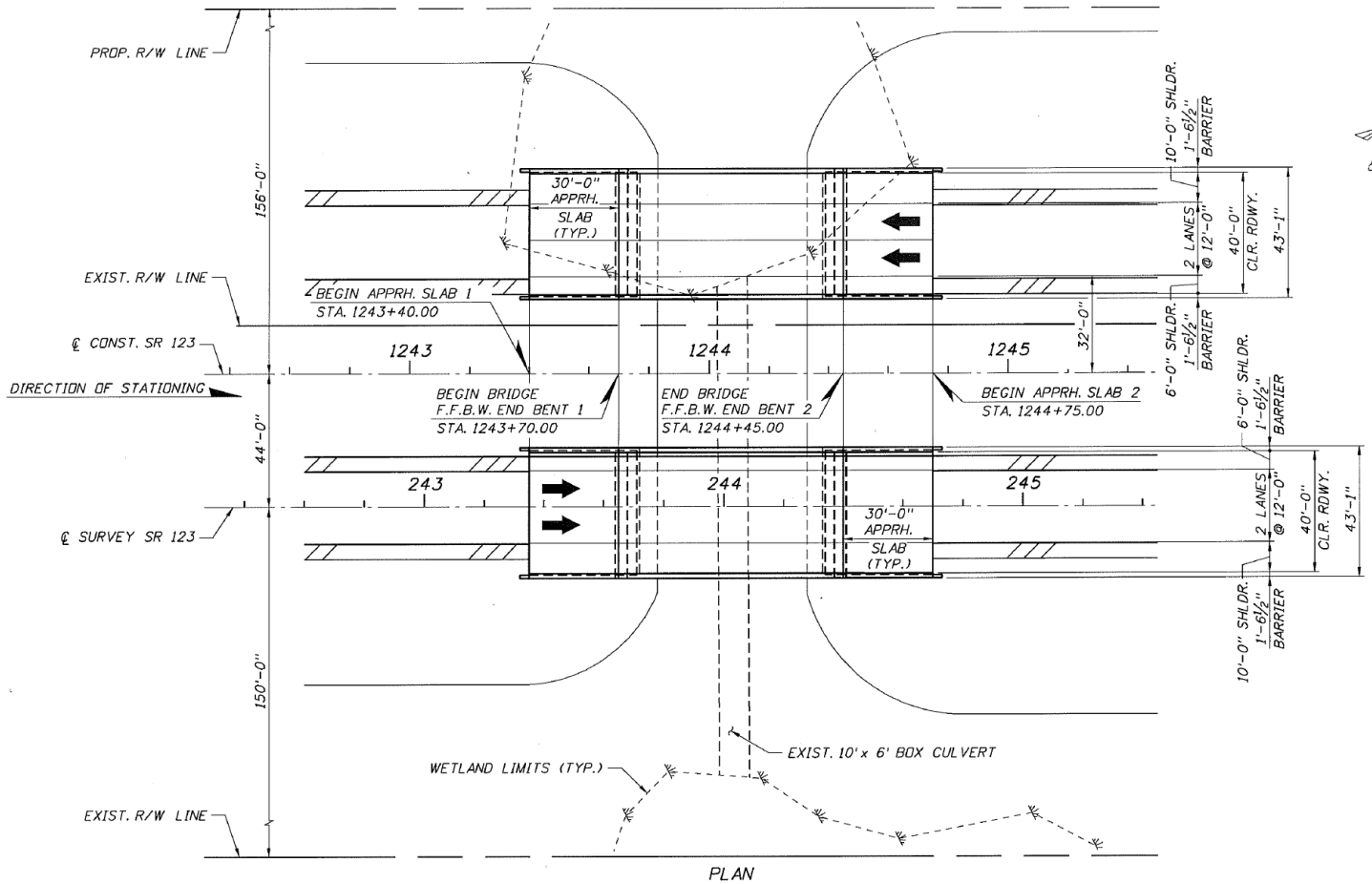


Figure 11. Three-Sided Culvert (Plan View)

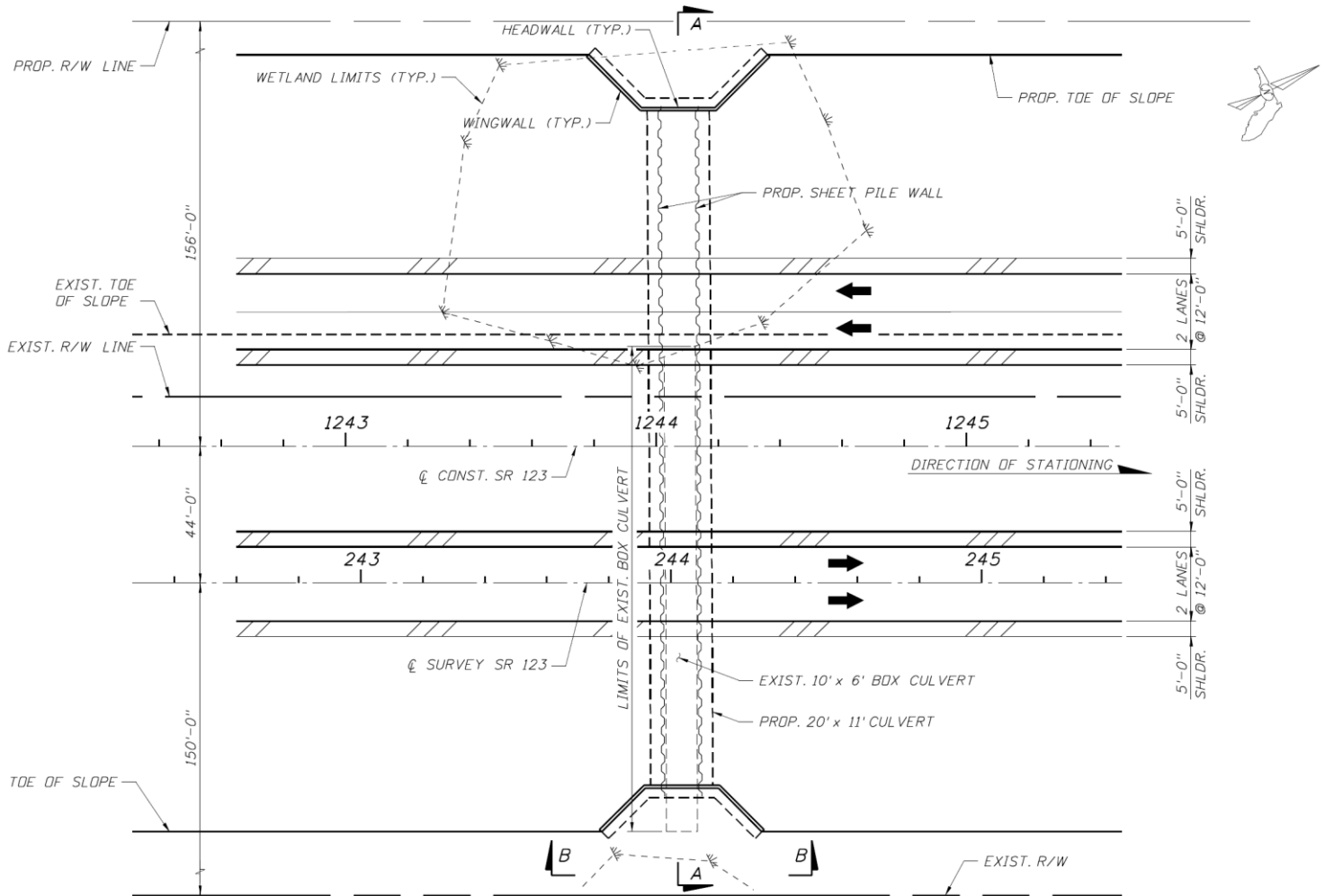
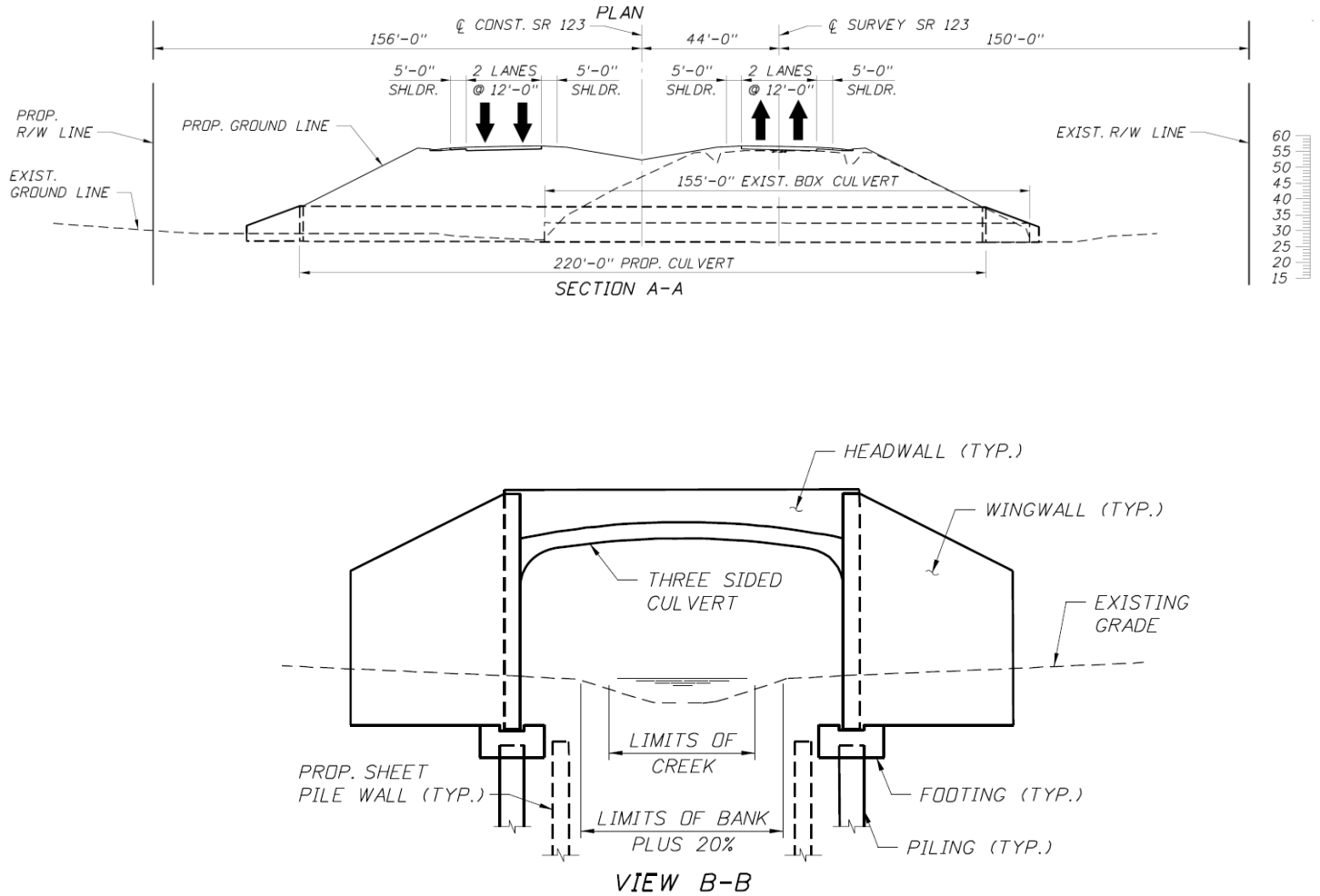


Figure 12. Three-Sided Culvert (Sections)



3. Bridge Construction Methodology

Bridge construction methods should be used that avoid or minimize impacts to streams. USFWS prefers top-down construction when feasible to reduce sedimentation and avoid damage to sensitive areas by heavy equipment.

Although top down construction is not practical for the project due to cost and time considerations, established construction methods can be used to minimize impacts to darter streams. At Tom's Creek and Turkey Creek, most of the work would be accomplished at-grade with ground-based construction. Within wetland limits and along the stream banks, construction would proceed from temporary access structures. Following construction, temporary access structures would be removed and disturbed wetland and riparian areas would be restored.

At the unnamed tributary to Turkey Creek, two single span bridge structures are proposed. In this regard, bridge construction would proceed at-grade from the abutment locations without temporary impacts to the stream or wetlands.

4. Runoff

Water quality should be maintained by conveying stormwater runoff to adjacent floodplains or stormwater treatment facilities, where applicable. The project will include stormwater management ponds for treatment of runoff before discharge to Tom's Creek, Turkey Creek, and the unnamed tributary to Turkey Creek. However, due to profile grade, it will not be possible to convey runoff from the bridges to stormwater ponds. Instead, runoff from the bridges will be conveyed away from the stream channel and discharged into the surrounding floodplains to allow overland or swale flow before entering the streams. As a result, stormwater runoff from the proposed bridges will not be discharged directly to the stream channels of Tom's and Turkey Creeks, or their tributaries.

5. Staging and Storage

Staging and storage areas should be located outside of environmentally sensitive areas. These sensitive areas include threatened, endangered, or rare species habitats, as well as areas where erosion and sedimentation may have adverse impacts to water resources, such as wetland, steepheads, or karst areas. Staging and storage areas will be coordinated with Eglin Natural Resources Section and USFWS prior to construction, and be sited to avoid environmentally sensitive areas.

6. NPDES

During construction and in compliance with the National Pollution Discharge Elimination System (NPDES), applicable best management practices (BMPs) should be employed to minimize impacts to wetlands, surface waters, and soils.

7. Water Management District Consultation

Stormwater management should be determined in consultation with the Northwest Florida Water Management District and/or the Florida Department of Environmental Protection during the permitting process.

8. Mitigation at Darter Streams

FDOT proposes replacement of the existing culvert at the unnamed tributary of Turkey Creek with single span bridge structures. In addition, proposed bridges at Tom's Creek and Turkey Creek would span bankfull plus 10% and likely avoid in-stream pier placement. In this regard, impacts to the Okaloosa Darter would be avoided.

As mitigation for potential effects, removal of the existing culvert at the unnamed tributary to Turkey Creek would eliminate approximately 5,800 cubic yards of fill material from the stream channel and surrounding habitat and create 0.22 acres of new stream/wetland area. With a full stream restoration along the site of the existing culvert, a Uniform Mitigation Assessment Method (UMAM) Relative Functional Gain (RFG) of 0.14 could be obtained, which would result in a 0.04 net RFG for the project.

9. Value Engineering Recommendations

In September 2008, VE Group and FDOT staff performed a Value Engineering Study on the SR 123 project. The VE Study recommendations included modifications to the typical section/profile, and bridge design. In summary, the VE recommended shorter bridges at the Turkey Creek and Tom's Creek crossings to save costs. FDOT decided to reject this recommendation due to preservation of optimal crossing for both the Okaloosa Darter and the Florida Black Bear.

The PD&E Conceptual Design utilizes the existing bridges over Tom's Creek and Turkey Creek for northbound traffic. New bridges are proposed at both locations for southbound traffic with a length that matches the existing bridges. The VE team recommended shortening the proposed southbound bridges at Tom's Creek and Turkey Creek by 150 feet each, setting abutments at a location five feet above the reported high water. The recommendation reports an anticipated savings of \$1,562,000. The recommendation would result in the following bridge lengths as summarized in **Table 5**.

Table 5. Value Engineering Recommendations for Bridge Length

Bridge Number	Location	Proposed Length	VE Length (150' Reduction)
570075	SR 123 Tom's Creek	550'	400'
570076	SR 123 Turkey Creek	830'	680'

While the shorter bridge lengths are feasible structurally and hydraulically, the VE team agreed to maintain the bridge lengths as proposed in deference to the two substantial fish and wildlife issues on the project: the Okaloosa Darter and the Florida Black Bear. Although acceptance of the VE recommendation would have saved approximately \$1.5 M, FDOT rejected these VE recommendations due to darter concerns at these two locations.

Avoidance and Minimization Procedures for Okaloosa Darter

In order to avoid and/or minimize Okaloosa Darter habitat impacts at Tom's Creek, Turkey Creek, and the unnamed tributary to Turkey Creek, the Department proposes the following conservation methods:

1. New bridges at Tom's Creek and Turkey Creek should be designed to span bankfull plus 10% as quantified in the Biological Assessment and to avoid in-stream pier placement. In the event in-stream pier placement cannot be avoided with standard design and cost feasible construction, piers at a minimum shall mirror the existing bridges and the pier location shall be coordinated with USFWS to minimize stream impacts.
2. The existing culvert at the un-named tributary will be replaced with a single span bridge structure to avoid stream impacts and provide potential access to upstream habitat. Construction at the unnamed tributary to Turkey Creek will span bankfull plus 10% as quantified in this Biological Assessment and avoid in-stream pier placement.
3. It is anticipated that bridge construction will be accomplished at-grade with ground-based construction. However, within wetland limits and along stream banks, work will be accomplished from temporary access structures. Following construction, temporary access structures will be removed and disturbed areas will be restored.
4. Runoff will be conveyed to stormwater ponds where practical for treatment before discharging to Tom's Creek, Turkey Creek, or the unnamed tributary to Turkey Creek. Location of stormwater ponds will be coordinated with Eglin Natural Resources Section.
5. Runoff from the bridges will be conveyed and discharged to surrounding floodplains to allow overland or swale flow before entering streams, avoiding direct discharge to the streams.
6. Staging and storage areas shall be coordinated with Eglin Natural Resources Section and USFWS prior to construction to avoid environmentally sensitive areas.
7. Best management practices (BMPs) will be implemented to minimize impacts to wetlands, surface waters, and soils in compliance with NPDES. During design, an erosion and sediment control plan will be coordinated with USFWS and Eglin Natural Resources Section.
8. A stream restoration will be performed along the bed of the existing culvert proposed for removal at the unnamed tributary to Turkey Creek to establish and reconnect habitat. Stream restoration will be coordinated with the Eglin Natural Resources Section.

3.3 EASTERN INDIGO SNAKE

The federally-threatened **Eastern Indigo Snake** (*Drymarchon couperi*) is the largest non-venomous snake in North America and can grow up to 125 inches in length. The USFWS listed the Eastern Indigo Snake as threatened in 1978 (*Federal Register* Vol. 43 No 52:11082-11093). It generally requires very large tracts of land to survive and Eglin AFB provides an ideal habitat with large expanses of undeveloped and undisturbed land. Indigo snakes utilize a diverse range of habitats, from flatwoods, hammocks, stream bottoms, cane brakes, riparian thickets, and high ground with deep, well-drained to excessively drained, sandy soils. Habitat preferences vary seasonally. Pine sandhill winter dens are used from December to April. Summer territories are selected from May to July. From August through November, indigo snakes are frequently located in shady creek bottoms. These seasonal changes in habitat encourage the maintenance of travel corridors that link these different habitat types (Hallam *et al.*, 1998). They are considered commensals of the Gopher Tortoise, wintering over in their burrows in the uplands, but foraging in more mesic to hydric habitats.

The Eastern Indigo Snake is found throughout Florida, but is rare in most areas. This species has been documented within the one mile buffered project alignment. No Eastern Indigo Snakes were observed during field investigations. There is a moderate potential for the occurrence of the indigo snake within the proposed project area. Potential impact to the indigo snake and its habitat may occur during the construction activities and operation of the project.

Protection measures for the Eastern Indigo Snake and an Eastern Indigo Snake Education Plan will be implemented prior to and during construction. USFWS *Construction Precautions for the Eastern Indigo Snake* form the basis for the precautions as summarized below:

Avoidance and Minimization Procedures for the Eastern Indigo Snake

1. All construction personnel will be provided a description of the Eastern Indigo Snake and its protection under federal law.
2. At the pre-construction conference, FDOTD3 District Environmental Management Office (DEMO) staff or their designee will advise the contractor of the potential to impact the Eastern Indigo Snake. The contractor will be required to make his personnel and those of his subcontractors aware of the possible presence of the indigo snake and its physical appearance.
3. If such snake is sighted within the construction area, the contractor or any subcontractor is required to halt potentially harmful activities that may injure the snake as long as the snake remains in the construction area. They will also receive instructions not to harass, injure, harm, or kill this species.
4. Assistance in relocating the snake may be requested through the Florida Fish and Wildlife Conservation Commission (FWC) at 850.488.3831. Any relocation of indigo snakes must be coordinated through Eglin NRS.

5. Signs will be posted in work areas to be aware for potential presence of the Eastern Indigo Snake. The signage will include instructions that if an indigo snake is sighted, immediately contact the Eglin Natural Resources Section (850/883-1153).

3.4 FLATWOODS SALAMANDER

The federally-listed **flatwoods salamander** (*Ambystoma* spp.) ranges in size from 3.5 to 5 inches. This salamander is small-headed and stocky and has a distinctive silvery gray coloration with black to brown mottling in a reticulated or sometimes frosted pattern. Based on morphological analyses and mitochondrial DNA, two species of flatwoods salamanders have been recognized – the threatened **Frosted Flatwoods Salamander** (*Ambystoma cingulatum*) to the east of the Apalachicola drainage, and the endangered **Reticulated Flatwoods Salamander** (*Ambystoma bishopi*) to the west. Therefore the Reticulated Flatwoods Salamander, *A. bishopi* is documented within the larger Eglin AFB property. Adult salamander habitat typically consists of mesic, fire-maintained, open-canopied Longleaf Pine (*Pinus palustris*) and Slash Pine (*P. elliotii*) flatwoods and savannas. Typical breeding sites consist of short-hydroperiod, isolated depressions. These depressions tend to have an open canopy or shrub layer that is likened to marshes.

Eglin's natural resource management for the Flatwoods salamander focuses on habitat management. Efforts to protect the species and its habitat include the observation of buffer areas from the edge of known and potential wetland habitat. Restrictions apply to ground disturbing activities within these buffers to minimize the potential for direct impact to salamanders and alterations to hydrology and water quality (USAF, 2006). No critical habitat areas were identified in the project alignment (**Figure 13**).

Though potential flatwoods salamander habitat is documented in the eastern portions of Eglin AFB (**Figure 13 inset**), and sites are documented well to the west and to the south, there are no documented sites within the project alignment. A Phase I assessment was completed in accordance with the FDOT / HDR *Flatwoods Salamander Habitat Evaluation Model*. The evaluation indicated a low potential for salamander habitat within the *secondary habitat buffer zone*, extending 1,476 feet from edge of the proposed right-of-way to the east and west for the length of the roadway project and surrounding potential stormwater pond sites. Examination of GIS mapping including land use, Natural Resource Conservation Service (NRCS) soil mapping, and wetlands characterized the project vicinity wetlands as contiguous, non-ephemeral, floodplain wetlands associated with Turkey Creek and Tom's Creek. These floodplain/bottomwood forested wetlands in hydric soils (primarily poorly-drained Dorovan Soils), are part of a large clear-water stream system. Seepage slope streams and baygalls occurring in small steephead tributaries constitute the rare natural wetland communities in the vicinity. Common to all these wetlands are their contiguous, flowing-water nature, and the presence of predatory fish which negate the potential for the existence of flatwood salamanders. **No Reticulated Flatwoods Salamander critical habitat has been designated in the area associated with the project alignment. No known or potential Reticulated Flatwoods Salamander habitat or breeding ponds have been documented in the *secondary habitat buffer zone* of the project alignment, nor have any reticulated flatwoods salamanders been**

observed within the area of the project alignment during field investigations. The SR 123 Project will likely not impact any potential breeding habitat areas as there is a low potential for the Reticulated Flatwoods Salamander or its habitat along the project alignment area. The project will not traverse known or potential reticulated flatwoods salamander habitat as determined by GIS database research, project field investigations, and a Phase I Flatwoods Salamander Habitat Evaluation. These findings coincide with the statements of the Eglin AFB staff-biologist at the March 6, 2008 environmental agency coordination meeting which indicated that no flatwoods salamander habitat existed in the area associated with the project alignment.

3.5 BALD EAGLE

As of August 8, 2007, the USFWS has removed (de-listed) the Bald Eagle from the federal endangered species list. However, protection continues under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The National Bald Eagle Management Guidelines⁶ have taken the place of the 1987 Habitat Management Guidelines which operated with 750-foot and 1,500-foot buffers around active nests. The proposed guidelines require one 660-foot no-activity buffer zone for projects of any size that are visible from the nest. The Bald Eagle most commonly uses habitats close to bays, rivers, lakes or other bodies of water providing good food sources. Bald Eagles generally nest in tall pine trees and return to the same nest year after year. Most Bald Eagles in northern and central Florida migrate north out of the state in May-July after the breeding season but some birds from northern populations migrate to northern Florida in the winter. No active Bald Eagle nests are documented within 660-feet of the project alignment area. There is an active Bald Eagle nest located at Test Site A-22 on Eglin which is approximately four miles from the southern boundary of the project area. This nest has been active for the past 10 years fledging young every year.

3.6 RED-COCKADED WOODPECKER

The federally endangered Red-cockaded Woodpecker (RCW) is a small woodpecker inhabiting open, mature pine woodlands, generally longleaf pine flatwoods in North and Central Florida. They nest and forage in mature pine flatwoods and other pine-dominated forests that are relatively open and possess areas or pockets of relatively old pine trees (> 70 years). They are non-migratory and maintain territories year-round. Populations are small and highly fragmented and are found primarily on federally managed lands with some state-owned and private lands supporting smaller populations (USAF, 2006). Eglin tracks potential breeding groups as a measure of population health. As a result of active management, RCW populations on Eglin have continued to increase. In 1994, there were 184 potential breeding groups, and in 2009 there were an estimated 371 potential breeding groups allowing Eglin to reach the recovery goal of 350 potential breeding groups. **Figure 14** shows the RCW inactive trees within the project alignment. No active trees are known to exist in the project vicinity.

Avoidance and Minimization RCW Procedures

1. Prior to construction, coordination with Eglin Natural Resources Section would be conducted to ensure no inactive or active RCW trees would be cut.

⁶ <http://www.fws.gov/pacific/eagle/NationalBaldEagleManagementGuidelines.pdf>

3.7 WOOD STORK

The federal and state-endangered **Wood Stork** (*Mycteria Americana*) is a large wading bird nesting colonially in inundated forested wetlands and foraging in short and long hydroperiod wetlands. In north Florida, colonies form in February and March. The core foraging area (CFA) of each colony is an 18.6 mile (mi) radius zone surrounding the colony boundary. Although there is the potential for Wood Storks within the project alignment area, there is no documented CFA within the project alignment area. Other wading birds potentially foraging within the project alignment area as identified by the FWC include two species of special concern, the **tri-colored heron** (*Egretta tricolor*) and the **white ibis** (*Eudocimus albus*).

3.8 OTHER SPECIES CONSIDERED

3.8.1 GOPHER TORTOISE

The state-threatened Gopher Tortoise (*Gopherus polyphemus*) is a terrestrial tortoise tends to favor relatively open upland scrub habitats. They typically forage in the dawn and dusk hours and spend most of the day in their burrows. Eglin AFB provides excellent habitat and foraging areas for the Gopher Tortoise. No Gopher Tortoises or active burrows were located within the project alignment area however; the SR 123 crosses many areas that would provide suitable foraging habitat for Gopher Tortoises in the area. Since the project alignment is traversing Gopher Tortoise habitat, there is a moderate potential of impact through incidental contact. Gopher Tortoise surveys should be conducted along SR 123 prior to construction activities. Should a Gopher Tortoise or its burrow be identified within the proposed alignment which cannot be avoided by 25 feet, a permit from FWC must be obtained and the Gopher Tortoise(s) relocated pursuant to the FWC permit requirements.

Avoidance and Minimization Procedures for the Gopher Tortoise

1. Surveys for Gopher Tortoises and burrows will be conducted within the proposed alignment within one month of the start of land clearing/construction
2. Gopher Tortoise burrows will be avoided by a minimum of 25 feet. If avoidance is not possible, then Gopher Tortoise relocation will be required (see item 3).
3. All relocations will be performed in accordance with FWC permit requirements.
4. All staging and storage areas should be sited to avoid impacts to Gopher Tortoise habitat.
5. If a Gopher Tortoise is sighted, immediately contact the Eglin Natural Resources Section (850.883.1153) and allow the tortoise to move out of harm's way.

Figure 13: Flatwoods Salamander Habitat

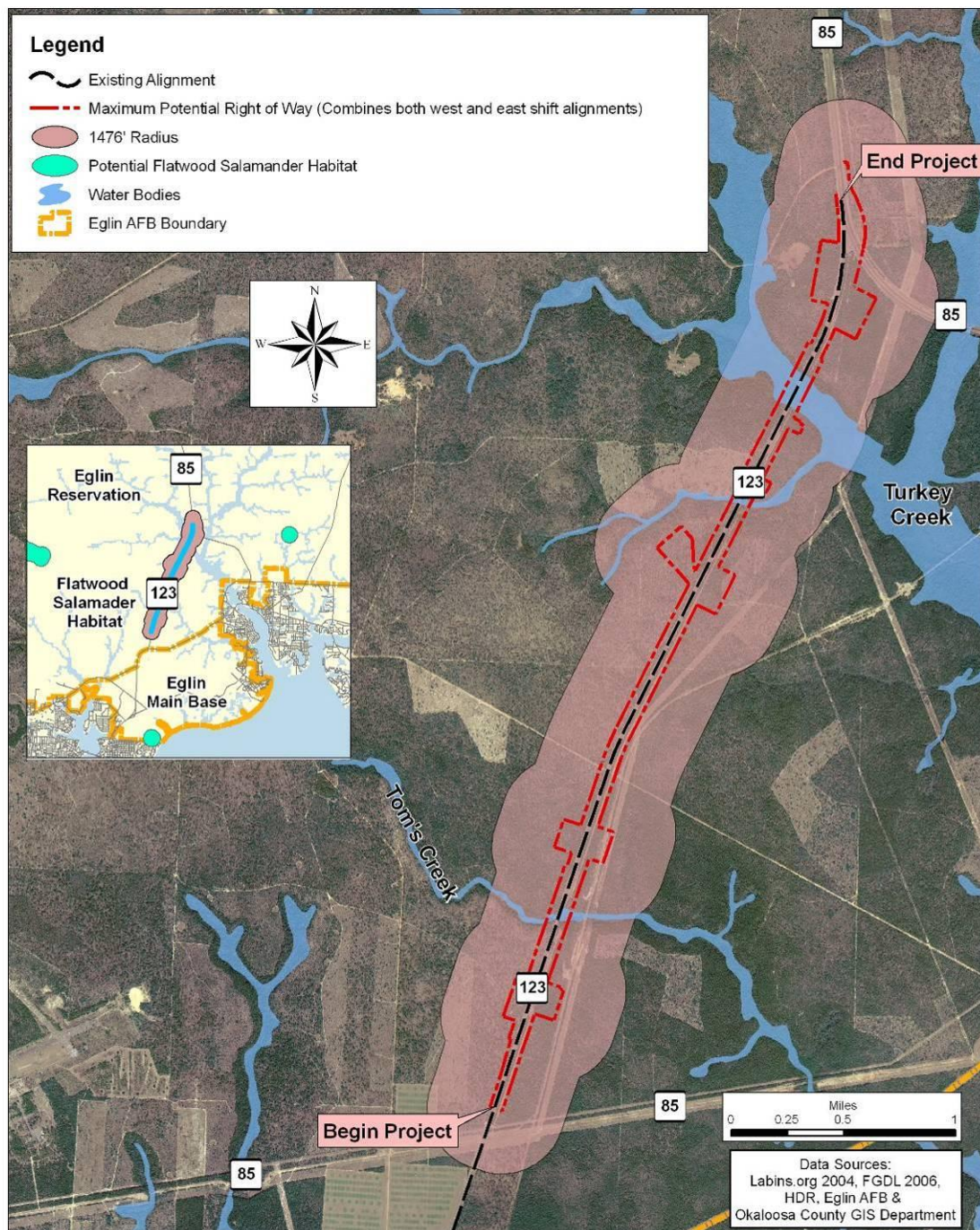
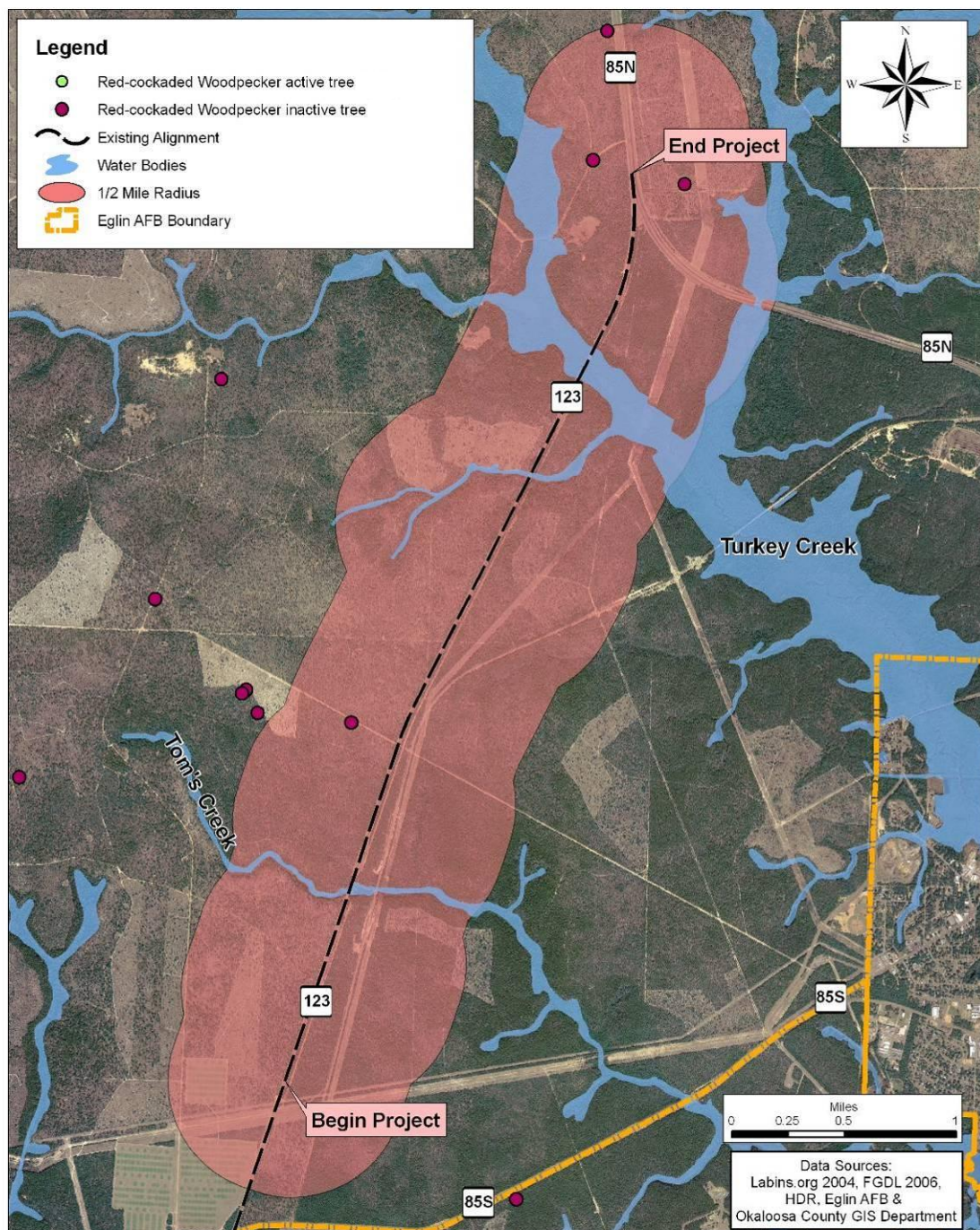


Figure 14: Red-cockaded Woodpecker Habitat



3.8.2 FLORIDA BLACK BEAR

The state threatened **Florida Black Bear** (*Ursus americanus floridanus*) is a large mammal that inhabits large expanses of undeveloped land for foraging. Their range is throughout north Florida and they are commonly found on Eglin AFB. The Eglin bear population is one of six bear populations in the state representing the largest and most stable populations (Simek 2005). The Florida Black Bear moves through various habitats such as pine flatwood communities and floodplain areas foraging primarily on berries and insects. Most sightings on the base occur during the dawn and dusk hours as the Florida Black Bear is mostly nocturnal and feeds during the cooler hours of the day. No Florida Black Bears were observed during field investigations. Eglin AFB has taken numerous measures to protect the Florida Black Bear from development and habitat degradation. Vehicle traffic and development are the primary threats for the Florida Black Bear. Crossing structures with appropriate fencing placed at existing bridge sites reduces the potential vehicle-caused bear mortalities (McCown, J. Walter, et al. 2009). There is a likely potential for the occurrence of the black bear. Vehicular deaths are now the number one killer of Florida Black Bears. Six historical black bear mortalities are documented on SR 123 (**Figure 15**). These deaths were documented between 1996 and 2005. There is a likely potential for the occurrence of the black bear along the project alignment, and a moderate potential for effects to the Florida Black Bear. As suggested by the USFWS and the Eglin Natural Resources Section (environmental coordination meeting, March 6, 2008), wetlands and streams should be spanned sufficiently to include the riparian areas to promote wildlife movement. Coordination has been initiated with FWC (Terry Gilbert, URS and Walter McCown, FWC Gainesville) to determine the need for funnel fencing along SR 123 and SR 85 (**Appendix D** environmental agency coordination). The project will incorporate into the bridge designs, areas underneath the structures that will span the wetland riparian area and sufficiently accommodate passages for terrestrial crossings to occur, where applicable as exhibited by the current structure.

The major crossings of Tom's Creek and Turkey Creek and their associated riparian areas where Florida Black Bear activity is known or likely to occur will be bridged to accommodate terrestrial passages for wildlife movement. Previous agency comments (USFWS & Eglin NRS) from the March 6, 2008 meeting indicate that the existing bridges meet the criteria for adequate terrestrial passage.

Avoidance and Minimization Procedures for Florida Black Bear

- Wildlife fencing will be provided as determined by coordination between FDOT, Eglin's Natural Resources Section and FWC, in accordance with FDOT *Wildlife Crossing Guidelines*.⁷
- New bridges over Tom's and Turkey Creeks will be constructed to the requirement of bankfull + 10% which therefore will provide for adequate wildlife movement.
- "Bear Crossing" signage will be posted in appropriate locations to alert motorists to potential bear crossing activity to promote safety for bears and motorists alike. If a black bear is sighted, immediately contact the Eglin Natural Resources Section at (850) 883-1153.
- Construction workers will be informed of the need to properly store and dispose of food waste to minimize attracting bears.

⁷ <http://www.dot.state.fl.us/emo/pubs/APPROVED-Wildlife%20Crossing%20Guidelines3-13.pdf>

Figure 15: Black Bear Mortality



3.8.3 SPECIES OF SPECIAL CONCERN AND OTHER SPECIES CONSIDERED

Species of special concern documented in the wetland communities within the project alignment area include the **Pine Barrens Treefrog** (*Hyla andersonii*), a species of the unique seepage bog habitats, the **Alligator Snapping Turtle** (*Macrochelys temminckii*) and the non-listed **Round-tailed Muskrat** (*Neofiber ashei*) of the swamps and marshes. Though all of these species have the potential to occur within the project alignment area and some are actually documented within the one-mile buffered area of the project alignment, none of these species were observed during field reviews and none are expected to be impacted by the project.

The **Florida Burrowing Owl** (*Athene cunicularia floridana*) is a state-listed species of special concern. This small ground-dwelling owl inhabits the bare sandy soils of dry prairies and sandhill or ruderal pastureland. Predominantly non-migratory, a single disjointed population is documented on Eglin AFB outside the one mile buffer of the project alignment. Because suitable habitat may exist within the area of the project alignment within the range of this species, there is a potential for the species to occur. However, the species has not been documented within the area of the project alignment and there is a low potential for occurrence.

Other state-listed species of special concern potentially residing in the xeric habitats in the area of the project alignment include the **Florida Pine Snake** (*Pituophis melanoleucus mugitus*), historically documented within the one mile buffer of the project alignment in a xeric pine flatwoods area. The **Gopher Frog** (*Rano capito*), potentially uses the xeric upland forests as well as the associated marshes for breeding.

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4.0 DETERMINATION OF IMPACTS

4.1 OKALOOSA DARTER

Potential threats to the Okaloosa Darter are that of siltation and turbidity resulting from erosion and sedimentation. FDOT believes the project “**may affect, likely to adversely affect**” the **Okaloosa Darter or its habitat**. Therefore, the use of BMPs, bridge construction techniques that reduce impacts, water quality protection measures, and culvert removal, would facilitate the protection of this species.

Avoidance and Minimization Procedures for the Okaloosa Darter

1. New bridges at Tom’s Creek and Turkey Creek should be designed to span bankfull plus 10% as quantified in the Biological Assessment and to avoid in-stream pier placement. In the event in-stream pier placement cannot be avoided with standard design and cost feasible construction, piers at a minimum shall mirror the existing bridges and the pier location shall be coordinated with USFWS to minimize stream impacts.
2. The existing culvert at the un-named tributary will be replaced with a single span bridge structure to avoid stream impacts and provide potential access to upstream habitat. Construction at the unnamed tributary to Turkey Creek will span bankfull plus 10% as quantified in this Biological Assessment and avoid in-stream pier placement.
3. It is anticipated that bridge construction will be accomplished at-grade with ground-based construction. However, within wetland limits and along stream banks, work will be accomplished from temporary access structures. Following construction, temporary access structures will be removed and disturbed areas will be restored.
4. Runoff will be conveyed to stormwater ponds where practical for treatment before discharging to Tom’s Creek, Turkey Creek, or the unnamed tributary to Turkey Creek. Location of stormwater ponds will be coordinated with Eglin Natural Resources Section.
5. Runoff from the bridges will be conveyed and discharged to surrounding floodplains to allow overland or swale flow before entering streams, avoiding direct discharge to the streams.
6. Staging and storage areas shall be coordinated with Eglin Natural Resources Section and USFWS prior to construction to avoid environmentally sensitive areas.
7. Best management practices (BMPs) will be implemented to minimize impacts to wetlands, surface waters, and soils in compliance with NPDES. During design, an erosion and sediment control plan will be coordinated with USFWS and Eglin Natural Resources Section.
8. A stream restoration will be performed along the bed of the existing culvert proposed for removal at the unnamed tributary to Turkey Creek to establish and reconnect habitat. Stream restoration will be coordinated with the Eglin Natural Resources Section.

4.2 EASTERN INDIGO SNAKE

Potential impact to the Eastern Indigo Snake is that of direct injury from vehicles and equipment, and habitat disturbance. Therefore, the use of BMPs that reduce impacts would facilitate the protection of this species. Though the project alignment traverses habitat suitable for the federally-threatened Eastern Indigo Snake, construction-related impact to the indigo snake is unlikely. Protection measures will include an Eastern Indigo Snake Education Plan to be implemented prior to and during construction.

1. All construction personnel will be provided a description of the Eastern Indigo Snake and its protection under federal law.
2. At the pre-construction conference, FDOTD3 District Environmental Management Office (DEMO) staff or their designee will advise the contractor of the potential to impact the Eastern Indigo Snake. The contractor will be required to make his personnel and those of his subcontractors aware of the possible presence of the indigo snake and its physical appearance.
3. If such snake is sighted within the construction area, the contractor or any subcontractor is required to halt potentially harmful activities that may injure the snake as long as the snake remains in the construction area. They will also receive instructions not to harass, injure, harm, or kill this species.
4. Assistance in relocating the snake may be requested through the Florida Fish and Wildlife Conservation Commission (FWC) at 850.488.3831. Any relocation of indigo snakes must be coordinated through Eglin NRS.
5. Signs will be posted in work areas to be aware for potential presence of the Eastern Indigo Snake. The signage will include instructions that if an indigo snake is sighted, immediately contact the Eglin Natural Resources Section 850.883.1153).

Based on incorporating the above-listed avoidance and minimization measures, FDOT believes the project **“may affect but is not likely to adversely affect” the Eastern Indigo Snake.**

4.3 GULF STURGEON

FDOT believes the project will have **“no effect” on the federally-threatened Gulf Sturgeon.** No sturgeon were documented in the vicinity of the project alignment. The bridged crossings of Turkey Creek and Tom’s Creek do not have the depth and velocity of flow to provide suitable habitat for the sturgeon.

4.4 FLATWOODS SALAMANDER

FDOT believes the project will have **“no effect” on the federally-endangered reticulated flatwoods salamander.** No potential or confirmed flatwoods salamander habitat or critical habitat areas were identified along the project alignment. The SR 123 project will likely not impact any potential breeding habitat areas as there is a low potential for the salamander or its habitat in the project alignment area. No flatwoods salamander habitat has been documented in

the 1,476-foot *secondary habitat buffer zone* east and west of the proposed roadway right-of-way and surrounding potential stormwater pond sites. No flatwoods salamanders were observed within the proposed alignment area during field investigations. The project will not traverse known or potential flatwoods salamander habitat as determined by GIS database research, field investigations, and a Phase I Habitat Evaluation which identified no salamander breeding pond habitat.

4.5 RED-COCKADED WOODPECKER

FDOT believes the project will have **“no effect” on the federally-endangered Red-cockaded Woodpecker**. Red-cockaded Woodpecker populations are small and highly fragmented and are found primarily on federally-managed lands with some state-owned and private lands supporting smaller populations. The project will not traverse RCW habitat as determined by GIS database research and field investigations. There are no documented active cavity trees/clusters within the proposed alignment despite the presence of moderately suitable habitat. No RCW or preferred habitat were observed in the project alignment during field investigations. No inactive or active RCW trees would be cut.

Avoidance and Minimization RCW Procedures

1. Prior to construction, coordination with Eglin Natural Resources Section would be conducted to ensure no inactive or active RCW trees would be cut.

4.6 WOOD STORK

FDOT believes the project will have **“no effect” on the federally-endangered Wood Stork**. The CFA of the federally endangered Wood Stork colony in north Florida is an 18.6 mile radius zone surrounding the colony boundary. Although there is the potential for Wood Storks within the proposed project area, there is no documented CFA within the proposed project area.

4.7 BALD EAGLE

There is a moderate potential for the Bald Eagle in the proposed action area based on available habitat data. No Bald Eagles or their nests have been documented in the area since 1997-1999. Therefore, FDOT believes the Proposed Action will have **“no effect”** on the Bald Eagle based on the following avoidance and minimization procedures.

Avoidance and Minimization Procedures for the Bald Eagle

1. During final design, the nest database would be reevaluated to assure no involvement.
2. Should a Bald Eagle be sighted, construction personnel would be directed to cease any activities and allow the eagle sufficient time to move away from the site on its own before resuming such activities.
3. Should a Bald Eagle take up residence along the project alignment prior to or during construction activities, compliance with the National Bald Eagle Management Guidelines⁸ would be required.

⁸ <http://www.fws.gov/pacific/eagle/NationalBaldEagleManagementGuidelines.pdf>

4.8 OTHER SPECIES CONSIDERED

4.8.1 GOPHER TORTOISE

Since the project alignment traverses Gopher Tortoise habitat and two inactive burrows were sighted in the vicinity during the August/September 2007 field reconnaissance, there is a moderate potential of impact through incidental contact. FDOT believes that by using the avoidance and minimization procedures outlined below, the project is “**not likely to adversely affect**” the Gopher Tortoise based on the following avoidance and minimization procedures.

Avoidance and Minimization Procedures for the Gopher Tortoise

1. Surveys for Gopher Tortoises and burrows would be conducted within the proposed alignment within one month of the start of land clearing/construction.
2. Gopher Tortoise burrows would be avoided by a minimum of 25 feet if possible. If avoidance is not possible, Gopher Tortoise relocation would be required.
3. All relocations would be performed in accordance with FWC permit requirements.
4. All staging and storage areas would be sited to avoid impacts to Gopher Tortoise habitat.
5. If a Gopher Tortoise is sighted, immediately contact the Eglin Natural Resources Section at 850.883-1153 and allow the tortoise to move out of harm’s way.

4.8.2 FLORIDA BLACK BEAR

Potential impact to the Florida Black Bear is that of vehicle strike. Therefore, the use of BMPs that reduce impacts would facilitate the protection of this species. There is a high potential for impacts to the Florida Black Bear as the project alignment would widen an existing corridor in an area known for vehicular bear strikes. Therefore, the project would include fences to enable wildlife to cross the roadway at natural and secure locations. In addition to this, Tom’s Creek and Turkey Creek would be spanned sufficiently to include the riparian areas to promote wildlife movement potential. In the unlikely event that construction personnel come into contact with a black bear, all activities would cease until the animal has moved away from the area.

The major crossings of Tom’s Creek and Turkey Creek and their associated riparian areas where Florida Black Bear activity is known or likely to occur will be bridged to accommodate terrestrial passages for wildlife movement. Previous agency comments (USFWS & Eglin) from the March 6, 2008 meeting indicate that the existing bridges meet the criteria for adequate terrestrial passage. The new bridges will meet or exceed the existing span footprint to provide for adequate wildlife movement.

FDOT believes that by using the avoidance and minimization procedures outlined below, the project is “**not likely to adversely affect**” the Florida Black Bear.

Avoidance and Minimization Procedures for Florida Black Bear

1. Wildlife fencing will be provided as determined by coordination between FDOT, Eglin's Natural Resources Section, and FWC, in accordance with FDOT *Wildlife Crossing Guidelines*.⁹
2. New bridges over Tom's and Turkey Creeks will be constructed to the requirement of bankfull + 10% which therefore will provide for adequate wildlife movement at these locations.
3. "Bear Crossing" signage will be posted in appropriate locations to alert motorists to potential bear crossing activity to promote safety for bears and motorists alike.
4. If a black bear is sighted, immediately contact the Eglin Natural Resources Section at 850.883.1153.
5. Construction workers will be informed of the need to properly store and dispose of food waste to minimize attracting bears.

4.9 CUMULATIVE EFFECTS (STATE, TRIBAL, AND PRIVATE ACTIONS)

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological assessment. Future Federal actions unrelated to the proposed action are not considered in this section because they will be subject to separate consultation pursuant to Section 7 of the Endangered Species Act. The project area is entirely within federal and military land of the Eglin AFB. Therefore, no Tribal, local, or private actions are reasonably certain to occur in the action area. The following reasonably foreseeable actions have been identified in the vicinity:

- At the intersection of SR 85S and SR 123, FDOT is advancing a project to construct a new interchange. This location is at the southern terminus of the project area, but is not included in this project. The interchange is under development pursuant to FPID 220231-1-32-01. A Finding of No Significant Impact (FONSI) was issued by the U.S. Department of Defense (DoD) on April 11, 2007. Construction groundbreaking commenced December 2009, as project RCS 04-886.
- The Mid-Bay Bridge Authority is advancing a project to construct a new 10-mile four-lane divided facility around the City of Niceville to the east and north (Okaloosa County, FL). A FONSI / Finding of No Practicable Alternative (FONPA) was issued by DoD December 5, 2008, as project RCS 07-523. The Biological Opinion from USFWS was issued September 16, 2008 and a permit for Incidental Take of Listed Species was issued by the Florida Fish and Wildlife Conservation Commission on December 22, 2009.

⁹ <http://www.dot.state.fl.us/emo/pubs/APPROVED-Wildlife%20Crossing%20Guidelines3-13.pdf>

- The Biological Opinion for the Mid-Bay Bridge Authority project estimated 465 darters (of which 362 are mature fish) could be impacted, representing 0.3 percent of fish in the four project basins, and 0.1 percent of the entire Okaloosa darter population. Cumulative effects to darter are reasonably foreseeable combined with the estimates of take as presented above. The degree of impact is not anticipated to adversely affect the continued recovery of the darter population.

Cumulative wetland and habitat effects are not anticipated. The interchange project would construct approximately 7 acres of stormwater retention under permit from the NFWFMD/FDEP. The interchange project would not have impacts to wetlands or floodplains. The interchange project did not identify potential impact to biological resources. The Mid-Bay EA/FONSI does not quantify the acres of retention ponds to be developed. At full build-out, the Mid-Bay project would affect 39.8 acres of floodplains and 42.77 acres of wetlands. Bridging, use of culverts, and mitigation would occur through the permitting process and result in restoring or enhancing wetlands and wildlife habitats. As a result of mitigation, and as further evaluated in the project's Biological Assessment and Biological Opinion, the Mid-Bay project was found to not jeopardize the continued existence of the Okaloosa Darter.

The FDOT will be responsible for obtaining all applicable wetland permits/authorizations prior to construction activities. The FDOT will also be required to provide mitigation associated with wetland impacts prior to commencement of construction activities. Prior to construction, an Individual Permit will be required from the USACE and an Environmental Resource Permit (ERP) will be required by the FDEP / NFWFMD. The USACE, FDEP and the NFWFMD regulate impacts to wetlands. Coordination with the USACE and FDEP or NFWFMD will be necessary during the design phase to establish the extent of mitigation before final permits will be issued. Under 373.4137 F.S., mitigation of FDOT wetland impacts will be implemented by the NFWFMD.

5.0 CONCLUSION

Table 6 below summarizes the “effects” determination by species.

TABLE 6. FEDERAL/STATE THREATENED AND ENDANGERED SPECIES EFFECTS DETERMINATIONS	
Species	Effects Determination
Okaloosa Darter	May affect, likely to adversely affect
Eastern Indigo Snake	May affect, not likely to adversely affect
Gulf Sturgeon	No effect
Flatwoods Salamander	No effect
Red-cockaded Woodpecker	No effect
Wood Stork	No effect
Bald Eagle	No effect
Gopher Tortoise	Not likely to adversely affect
Florida Black Bear	Not likely to adversely affect

Potential threats to the federally-threatened **Okaloosa Darter** are that of siltation by increasing stream sedimentation and inadvertent strike during project activities. Based on the number of Okaloosa Darter streams crossing the project alignment, potential impacts appear to be significant. However, careful analyses of the data indicate some streams may have little to no adverse impacts and some may have potentially adverse impacts based on population trend data. Because these streams have had historical Okaloosa Darter occurrences, FDOT believes a finding of **may affect, likely to adversely affect** the species is appropriate for the Okaloosa Darter. Therefore, BMPs and other protection measures as discussed would be used during bridge construction to minimize potential impacts. Additionally, it is likely that the darters would migrate away from the project site during activities, thereby eliminating adverse effects from sedimentation or the risk of a strike.

The discussion of the potential for impact associated with the project is provided without regard for alternative alignments because there is no significant difference in alternatives with respect to potential listed species impact. The project improves stream crossings and encourages fish passage, thereby adhering to the purpose of the 2006 Eglin *Formal Programmatic Biological Assessment for Road-Stream Crossing Elimination and Replacement*. The USFWS would be notified if any of the actions are modified or if additional information on listed species becomes available. If impacts to listed species occur beyond what has been considered in this assessment, all operations would cease and the USFWS would be notified. Any modifications or conditions resulting from consultation with the USFWS would be implemented prior to commencement of activities. FDOT believes this fulfills all requirements of the Endangered Species Act, and no further action is necessary.

Based on the elusive and mobile nature of the federally-threatened **Eastern Indigo Snake**, incidental contact is considered unlikely. Therefore, FDOT believes the project **may affect, but not likely to adversely affect** the species. However, as with any federal or state listed species, a sighting would be reported immediately and all construction related activities would cease until the animal has moved away from the site under its own direction. By adhering to the FDOT *Construction Precautions for the Eastern Indigo Snake*, impacts to this species are not anticipated.

FDOT believes the project would have **no effect** on the federally-threatened **Gulf Sturgeon**. No sturgeon has been documented in the project area. The bridged crossings of Tom's Creek and Turkey Creek do not have the depth and velocity of flow to provide suitable habitat for the sturgeon along the project alignment.

Based on Eglin AFB (GIS data), the project would not impact known or potential **Reticulated Flatwoods Salamander** habitat. Potential flatwoods salamander habitat is well-documented in the eastern portions of Eglin AFB; however no documented habitat or critical habitat areas were identified in the project alignment area. Therefore, FDOT believes the project would have **no effect** on the species.

Based on Eglin AFB (GIS data), the project would not impact any active **Red-cockaded Woodpecker** trees. There are no documented active cavity trees/clusters within the project alignment area. FDOT believes the project would have **no effect** on the federally-endangered Red-cockaded Woodpecker. No inactive or active RCW trees would be cut.

FDOT believes the project would have **no effect** on the federally-endangered **Wood Stork** or **Bald Eagle**. Although there is the potential for Wood Storks along the project alignment, there is no documented rookery or associated CFA within 18.6 miles of the project area. No active Bald Eagle nests are documented within 660-feet of the project alignment.

Fences and properly designed bridges and spans would promote the wildlife movement potential of many mammals, including **black bears**, amphibians, and reptiles. Properly designed bridges and culverts would ensure the hydraulic and hydrologic integrity of the systems. Maintaining the natural topography and biological characteristics of the area would enable these sensitive systems to continue to support an abundance of flora and fauna. The Department would continue to coordinate with the Eglin Natural Resources Section and the FWC regarding adequate wildlife fencing and signage and to ensure adverse impacts are negligible. Therefore, FDOT believes that the project **is not likely to adversely affect** the Florida Black Bear.

The project would traverse potential habitat of the state-threatened **Gopher Tortoise**. Surveys will be conducted along SR 123, staging/storage areas, and stormwater management facilities prior to construction activity. Should a Gopher Tortoise or its burrow be identified that cannot be avoided by 25 feet, a permit from FWC would be obtained with relocation pursuant to the FWC permit requirements. Therefore, FDOT believes that the project **is not likely to adversely affect** the Gopher Tortoise.

6.0 REFERENCES

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